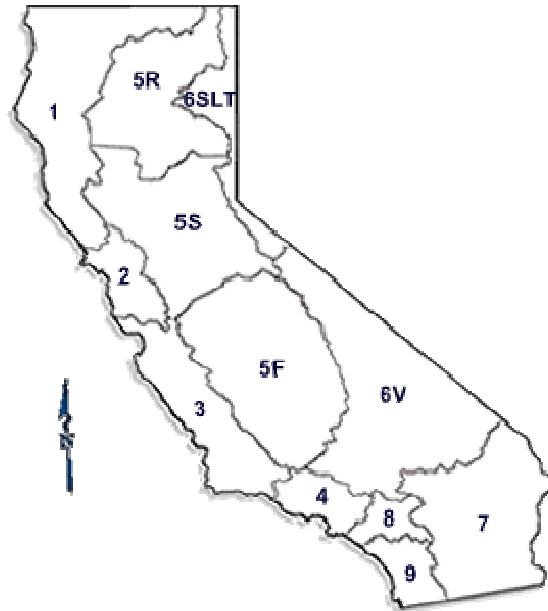




ANNUAL PROGRESS REPORT FOR FEDERAL CLEAN WATER ACT SECTION 319 PROGRAM

July 2007 through June 2008



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State Water Resources Control Board

California Regional Water Quality Control Boards

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INTRODUCTION

The State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards (Regional Water Boards) (Water Boards) together with the California Coastal Commission (CCC) are the lead State agencies for implementing the Nonpoint Source (NPS) Program through the *Plan for California's Nonpoint Source Pollution Control Program* (NPS Program Plan). The purpose of the NPS Program is to improve the State's ability to effectively manage NPS pollution. The overall goal of California's NPS program is the prevention or control of NPS pollution such that none of the beneficial uses of water is impaired by that pollution. Our efforts are focused on promoting a watershed-based approach, implementing high-priority management measures (MMs), using tools outlined in the "*Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program*" (NPS Policy), and educating the public and providing technical assistance.

The NPS Program allocates a significant portion of its resources to work with watershed groups to: (1) encourage development and implementation of watershed management plans that address NPS pollution, (2) implement MMs, and (3) educate and provide technical assistance to the public, agencies, and private landowners about NPS pollution problems and solutions. Throughout the State, the NPS Program is spearheading efforts to track, monitor, and assess MM implementation. The Program is involved in collaborative efforts to streamline project implementation that achieve noticeable water quality improvements in a timely and cost-effective manner.

The NPS Policy and TMDL Implementation

This year marks a renewed focus on the implementation of total maximum daily loads (TMDLs) where the major pollutant loadings are derived from NPS pollution. Through Clean Water Act section 319(h) (CWA 319[h]) implementation grants, the NPS Program continues to provide funds to implement management practices (MPs) on the ground wherever possible. These implementation projects are coordinated with TMDL implementation plans as well as watershed plans, allowing the NPS Program to focus efforts and increase the opportunity of producing measurable water quality improvements. In addition, the NPS Program continues to encourage coordination on a watershed-scale level, looking for multiple benefits to specific and severely impacted watersheds through individual projects or actions. Through CWA 319[h] implementation grants and other actions, high-priority TMDLs and Measure W high priority watersheds are all getting the bulk of the funds and assistance. This should result in more quantifiable and cumulative benefits in the long term.

Watershed Improvement Measure (WIM)

In 2006, the U. S. Environmental Protection Agency (US EPA) and the Water Boards worked together to establish California's commitments for the US EPA Strategic Watershed Improvement Measure (WIM), also known as Measure "W". The purpose of the WIM was to delineate specific watersheds where the Waterboards expected to document successful water quality restoration by 2012. Of these 16 watershed segments, the Water Boards agreed to work towards achieving success by 2012 in 6 of them. Table 1 lists the pollutant and status of those watersheds that are primarily NPS-impaired, are likely to be partially or fully restored and will

provide a measure of progress in reducing loadings of key pollutants (nitrogen, phosphorous, sediment). The table is updated through November, 2008.

Table 1. Status of Efforts for Tracking Environmental Improvements Under Measure “W”

RB	Watershed Name/ Pollutant Listing consideration for “W”	Status
1	French Creek (tributary to Scott River and lower main stem Klamath River) <ul style="list-style-type: none"> Sediment & temperature 	<ul style="list-style-type: none"> TMDL adopted 12/05, EPA approved 9/06 Required implementation actions underway Active Coordinated Resource Management Plan (CRMP)/watershed council effort BMPs for roads implemented in 1990's Monitoring efforts continue to show results from sites monitored in 2008 RB responded to complaints of sediment discharges, resulting in greater erosion control and awareness Water Trust lease has increased instream flows Riparian fencing and planting projects have been implemented.
	Terwer Creek (tributary to lower main stem of Klamath River) <ul style="list-style-type: none"> Sediment 	<ul style="list-style-type: none"> TMDL adopted 12/98, USEPA approved 3/02 Yurok tribe recipient of Targeted Watershed Grant Roads will be decommissioned over next 3 years Tracking partnership with Yurok tribe Klamath and tributaries are proposed for listing in 2006
	Garcia River <ul style="list-style-type: none"> Sediment 	<ul style="list-style-type: none"> TMDL adopted in late 12/1998, EPA approved 3/02 Ongoing development and approval of Erosion Control Plans and management Plan across 70% of watershed Continued collaboration with agencies, landowners, and interested parties to restore watershed Comprehensive effort to implement instream monitoring using the US EPA's EMAP and State of California's Surface Water Ambient Monitoring Program (SWAMP) Grant oversight for restoration activities Enforcement actions occurring when necessary
	Shasta River <ul style="list-style-type: none"> Temperature, Dissolved Oxygen 	<ul style="list-style-type: none"> TMDL adopted 6/06, EPA approved 1/07 Continued outreach efforts to enroll landowners in TMDL conditional waiver program Four small dams removed in 2007-9 as required in TMDL. Working with landowners to remove two more dams, 2008-10. RCD tailwater program identified and prioritized discharges, 2007-8. Tailwater elimination systems under design. Big Spring Ranch WQIP to be completed 03/09
4	Calleguas Creek Reach 7 <ul style="list-style-type: none"> Ammonia Reach 11 <ul style="list-style-type: none"> Ammonia 	<ul style="list-style-type: none"> TMDL adopted 10/02, EPA approved 06/03 NPDES permit limits revised to incorporate WLA's' 05/03 NDN constructed at Simi Valley WWTP (Reach 7) 10/04, final effluent limits are being achieved Olson WWTP (Reach 11) no longer discharges 1st annual monitoring report for the Irrigated Lands conditional waiver program submitted 02/08 Draft water quality management plan for the conditional

RB	Watershed Name/ Pollutant Listing consideration for "W"	Status
		waiver program submitted 08/08 – specifies actions to address nitrogen water quality benchmark exceedences.
	Santa Clara River Reach 3 <ul style="list-style-type: none"> Ammonia 	<ul style="list-style-type: none"> TMDLs adopted 7/03, EPA approved 3/04 NPDES permit limits revised to incorporate WLAs 10/03 NDN not yet constructed. TSO requires final effluent limits be achieved by 9/09. 1st annual monitoring report for the Irrigated Lands conditional waiver program submitted 2/08. Draft water quality management plan for the conditional waiver program submitted 08/08 – specifies actions to address nitrogen water quality benchmark exceedences.
	LA River Reach 3 <ul style="list-style-type: none"> Ammonia 	<ul style="list-style-type: none"> TMDL adopted 7/03, EPA approved 3/04 NPDES permit limits revised to incorporate WLAs 12/06 NDN constructed 04/07, final effluent limits are being achieved.
5	Feather River <ul style="list-style-type: none"> Diazinon 	<ul style="list-style-type: none"> TMDL adopted 10/03, EPA approved 8/04 Less use of diazinon Measure improvement already documented Adopted new diazinon objectives that include additivity with chlorpyrifos 5/07
	Sacramento River, (Shasta Dam to I St bridge) <ul style="list-style-type: none"> Diazinon 	<ul style="list-style-type: none"> TMDL completed in 10/03, EPA approved 8/04 Less use of diazinon Measured improvement already documented Adopted new diazinon objectives that include additivity with chlorpyrifos 5/07
	Sacramento Area Urban Creeks <ul style="list-style-type: none"> Diazinon Chlorpyrifos 	<ul style="list-style-type: none"> TMDLs adopted by resolution 9/04 Being implemented though 2004 MS4 stormwater permit Proposed for delisting Monitoring documenting successful phaseout of use
	Grasslands and Salt Slough Tributary to San Joaquin River) <ul style="list-style-type: none"> Selenium 	<ul style="list-style-type: none"> TMDL adopted 1996, EPA approved Implementation program underway Monitoring data available documenting load reductions
8	San Diego Creek <ul style="list-style-type: none"> Diazinon Chlorpyrifos 	<ul style="list-style-type: none"> TMDLs adopted 4/03, EPA approved 2/04. Implementation started in 2003 As of Nov. 2008, WQ improvements implementation and tracking include: <ol style="list-style-type: none"> 1) RB staff and University of California Cooperative Extension (UCCE) worked with Orange County nurseries to reduce nursery pesticides runoff (RO); project was completed in 2007. Monitoring ongoing. 2) TMDL-based limits included in relevant WDRs. Compliance schedules incorporated, with compliance required. 3) A pesticide RO management plan developed under 319 grant, under implementation, and includes monitoring.
	Upper Newport Bay <ul style="list-style-type: none"> Chlorpyrifos 	

RB	Watershed Name/ Pollutant Listing consideration for "W"	Status
		4) RB staff drafting an annual report to summarize pesticide data and evaluate effectiveness of the pesticide management plan. 5) Analysis of urban RO program initiated.
7	New River <ul style="list-style-type: none"> Bacteria 	<ul style="list-style-type: none"> TMDL adopted 10/01, EPA approved 8/02 Treatment plant in Mexico started operation in march 2007 RB staff continues to monitor Trash/solid water program in place Farm Bureau TMDL completed on CA side – being implemented with Federal 319 and bond funds
9	Chollas Creek <ul style="list-style-type: none"> Diazinon Metals Trash 	<ul style="list-style-type: none"> Diazinon TMDL adopted 6/02, EPA approved 11/03 Diazinon TMDL attained due to US EPA ban on use of product Metals TMDL adopted 6/07, EPA approval pending Metals TMDL implementation planned, to be done primarily through stormwater permits.
	San Diego Beaches <ul style="list-style-type: none"> Pathogens 	<ul style="list-style-type: none"> TMDL to be adopted in FY 08-09 BMPs being implemented Proposed delisting

THE NPS ENFORCEMENT AND IMPLEMENTATION POLICY AND TOOLS

The Water Boards' NPS Policy provides guidance for developing an integrated program for implementing and enforcing the NPS Program Plan and, in so doing, fulfills the requirements of the California Water Code (CWC) section 13369. The NPS Policy explains how the mandates and authorities, delegated to the Water Boards by the California Legislature, will be used to implement and enforce the NPS Program Plan. The policy also provides a bridge between the NPS Program Plan and the *State Water Board's Water Quality Enforcement Policy* (Enforcement Policy¹). The information provided in the NPS Policy is designed to assist all responsible and/or interested parties in understanding how the State's NPS water quality control requirements will be implemented and enforced. The parties involved include the State and Regional Water Boards, federal, state and local agencies, individual dischargers, designated third-party representatives and any other interested public and private parties. The goal is to provide an integrated statewide approach to controlling nonpoint sources of pollution.

Given the extent and diversity of NPS pollution discharges, the NPS Policy provides the Regional Water Boards with the ability to be as creative and efficient as possible in devising approaches to prevent or control NPS pollution. The Policy provides guidelines for development of third-party NPS control programs and a number of the Regional Water Boards have adopted this approach. A primary advantage of the development of third-party programs is their ability to reach multiple numbers of dischargers who individually may be unknown to the Regional Water Board.

¹ SWRCB, 2002. Water Quality Enforcement Policy. Office of Statewide Initiatives, Sacramento, CA. February 2002.

Successful implementation of the NPS Program largely depends on two factors: the ability of the Regional Water Boards to use their administrative authorities and limited resources in creative and efficient ways, and the willingness of dischargers to implement MPs and other strategies that effectively prevent or control NPS discharges. The Policy provides the Regional Water Boards the opportunity for periodic evaluation of all aspects of the program and an adaptive management approach that facilitates the road to success. Statewide implementation of the NPS program is predicated not only on individual NPS discharger actions to adopt and adapt alternative MPs, but upon the development and adaptation of self-determined management structures that encourage and support these changes. In addition, the Policy provides the Regional Water Boards with the needed flexibility to experiment, evaluate, and adapt management approaches that will support and bring us closer to our ultimate goal -- controlling NPS pollution to protect the quality of waters of the State in accordance with the mandates of the CWC.



During the last four years, the NPS Policy served to confirm the Water Boards authority to regulate NPS pollution and provided the genesis for many NPS control implementation programs throughout the various regions. Some of these efforts are taking hold; some are just beginning. For some of the Regional Water Boards, efforts have ushered in a new era of collaboration and cooperation; for others their efforts have been met with controversy and conflict. Nonetheless, the NPS Implementation and Enforcement Policy provides a template for NPS pollution control in California and the nation.

Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Land

Irrigated Land Regulatory Program Overview

The CWC authorizes State and Regional Water Boards to conditionally waive waste discharge requirements (WDRs) so long as it is in the public interest. Waivers are conditional and in the past have contained few conditions. These waivers required that discharges not cause violations of water quality objectives, but did not require water quality monitoring. On October 6, 1999, California Senate Bill 390 (SB 390) was signed into law requiring all nine of the Regional Water Boards to review their existing waivers and to renew them or replace them with WDRs or they would expire on January 1, 2003. The Regional Water Boards complied with the SB 390 requirements and adopted revised waivers. The most controversial waivers were those focused on the discharges from irrigated agriculture.

Discharges from irrigated agriculture can affect water quality of surface waters by transporting pollutants including pesticides, sediment, nutrients, salts, pathogens and heavy metals. Many of California's surface water bodies are currently impaired because of these pollutants from

agriculture discharges. Agricultural pesticides, nitrates and salt contaminants have also impaired groundwater bodies. Statewide, approximately 9,500 miles of rivers and streams, and some 500,000 acres of lakes and reservoirs are listed on the Clean Water Act section 303(d) (CWA 303[d]) list as being impaired by irrigated agriculture. Approximately 2,800 miles or 28% have been impaired by pesticides.



The Central Coast, Los Angeles, Central Valley, and San Diego Regional Water Boards have adopted conditional waivers to control and assess the effects of discharges from irrigated agriculture. Currently, the San Diego Regional Water Board has proposed a resolution requesting the State Water Board approve an amendment revising many of the conditional waivers, including those that cover agricultural discharges within the San Diego Region. The Santa Ana and San Francisco Regional Water Boards are currently developing waivers to address discharges from agriculture. The Colorado River Basin Water Board has adopted a Conditional Prohibition as a TMDL implementation plan incorporated into their Regional Water Quality Control Plan (Basin Plan). The North Coast and Lahontan Regional Water Boards have no immediate plans to adopt waivers for agricultural discharges, but may do so eventually to implement TMDLs.

Under sometimes controversial conditions, these Regional Water Boards have made significant progress in implementing their waiver programs. Each Regional Water Board is committed to continue their efforts to work with the agricultural community to protect and improve water quality.

The number of agricultural acres, operators and operations will continue to increase as remaining Regional Water Boards adopt conditional waivers for discharges from irrigated agricultural lands. In California, an estimated 80,000 growers, cultivating approximately 9 millions acres, are currently subject to conditional agricultural waivers.

The Regional Water Boards are using proactive solutions to control agricultural discharges. One of these solutions is a pilot project which assigns roles for implementing the waivers to County Agricultural Commissioners. A Memorandum of Understanding signed by staff from Central Valley Water Board, the State Water Board, the Department of Pesticide Regulations and County Agricultural Commissioners describes these roles. Additionally, Los Angeles, Central Coast and the San Diego Water Boards have used a comprehensive public outreach and education approach. Consequently, 70 percent of their agricultural communities are participating in the program.

State and Regional Water Board staff and the agricultural community recognize the importance of the irrigated agricultural waiver program and are committed to work together to assess and address environmental impacts that are identified as being caused by discharges from irrigated lands.

Central Coast Region

Approximately 70% of all fresh produce sold in the U.S. is grown in the Central Coast of California. The Central Coast Regional Water Quality Control Board (Central Coast Regional Board) adopted a Conditional Waiver for Irrigated Lands (Agricultural Waiver) for their region in

July, 2004, and has worked closely with the support of the agricultural and environmental communities since then to build a program whose goal is to improve water quality in several of the regions largest watersheds. Growers were required to enroll in the program, complete a farm plan/management practices checklist, and complete 15 hours of water quality education. With nearly 93% of the irrigated acreage in the region enrolled in the waiver program, the Central Coast Regional Water Board staff has developed and implemented a statistically-based inspection program to keep up with the 1,700+ enrolled farming operations. The Central Coast Regional Water Board initiated enforcement actions against non-enrolled growers, and ensured that 1,400 farming operations completed their farm plans, with 1,100 of them having completed the required 15 hours of education, and all of them are implementing some level of MPs. The program has become multilingual. In the early years, the large Spanish-speaking grower community was accommodated with Spanish language training and information. This year, the UCCE Farm Advisor in Santa Cruz County worked to reach approximately 30 Chinese-speaking growers in the region. Most of these growers have now completed their 15-hour training requirement through a workshop given in English with simultaneous translation into Chinese, and translated course materials.



Monterey County Lettuce and Water Savings

The Central Coast Regional Water Board staff, the UCCE, and “Fresh Express”, a major buyer of produce, have partnered together in an historic arrangement to significantly reduce water usage, and thereby reduce polluted irrigated runoff from farms in Monterey County. In addition to polluted runoff, Monterey County also has sea water intrusion and drinking water supply problems, so reducing water use should help address water supply issues as well. Monterey County extracts between 400,000 to 500,000 acre feet (AFT) of groundwater per year to irrigate a variety of crops. Water applied to irrigate head and romaine lettuce typically averages 1.5 AFT per acre. The Monterey County Agricultural Commissioners office reported a total of 198,171 acres of lettuce grown in 2005. Given an average of 1.5 AFT per acre, approximately 297,000 AFT of water was used to grow lettuce in 2005.

Agronomists and irrigation advisors with UCCE conducted small, initial field trials in lettuce where they determined that the average evapotranspiration (ET) requirement of lettuce grown with drip irrigation was 0.6 AFT – about 40% of the average current water use for lettuce. The Central Coast Regional Water Board and Fresh Express are funding trials at a commercial scale to determine minimum water use for the lettuce. Fresh Express has agreed to require implementation of the final results for all their growers. The initial trials used less than half the current average water use for lettuce. Even conservatively using an average of 1.0 AFT, this represents a potential savings of almost 100,000 AFT of water per year, much of which is currently flowing off farms as irrigation runoff.

Within the agricultural watersheds of Monterey County, there are numerous CWA 303d listings for pesticides and nutrients, which are directly associated with irrigation water runoff into public waterways. Given the large number of acres growing for Fresh Express, implementing these measures should continue to substantially reduce both water usage and polluted irrigation water runoff coming from farms.

Use of Notice of Violation Enforcement Actions for Farm Runoff in Strawberry Fields

The Central Coast Regional Water Board's Irrigated Agricultural Program used its first Notice of Violation (NOV) this year to stop stormwater runoff laden with sediment at the Oceano Ranch in Arroyo Grande. Several complaints indicated that the sediment-laden water was leaving the ranch, entering a California Department of Transportation right-of-way and depositing up to 6 inches of sediment across a major intersection, entering neighboring yards, and a storm drain. This chronic problem was determined to be a nuisance under CWC section 13050, and violated the Irrigated Agricultural Order (IAO), which regulates discharges from irrigated lands, including storm water runoff and sediment. The NOV required the land owner and farm manager to submit plans on how they would address and resolve this issue pursuant to CWC section 13267.

The IAO requires MPs to reduce storm water runoff during storm events. As a result of this enforcement action, the farm manager hired an agricultural engineer and proposed a combination of source and runoff controls to address the strawberry field runoff. The Central Coast Regional Water Board anticipates that this enforcement action will successfully lead to the use of multiple on-farm MPs that will address the excessive amounts of sediment leaving the site and alleviate the nuisance to neighbors and vehicle traffic on the highway.

Agricultural Inspections and Monitoring

One new and successful component of the Central Coast Regional Water Board Irrigated Agriculture Program is the inspection program. Inspections have improved awareness of agricultural waiver requirements and watershed water quality problems, and increased MP implementation. Staff has focused some of the inspections on watersheds in which monitoring data indicates water column toxicity to invertebrates and high concentrations of organophosphate pesticides such as diazinon and chlorpyrifos. Staff has assessed pesticide applications and cropping systems in these watersheds, and has worked with growers and local technical assistance providers to help them implement practices that will prevent or reduce the discharge of pesticides. Referrals to technical assistance and follow-up inspections are an important part of our overall progressive enforcement approach, allowing Central Coast Regional Water Board staff to prioritize enforcement actions and increase compliance, while using their limited resources effectively.

Another critical component of the agricultural program is monitoring. The industry-led cooperative monitoring program was established after the waiver was adopted in 2004. It has done an outstanding job of monitoring ambient water quality of streams in intensive agricultural areas of the central coast and presenting data to growers. The information from the monitoring program increases growers' understanding of their contribution to water quality problems and encourages MP implementation. A recent aspect of the monitoring program is on-site monitoring. On-site monitoring evaluates discharge coming directly off the farms and provides growers valuable feedback on whether existing practices are effective.

Enrollment Tracking

As of August 2008, 1,775 agricultural operations in the Central Coast region are enrolled in the Conditional Waiver for Irrigated Agricultural Lands. This enrollment accounts for approximately 90% of the 430,000 irrigated acres that are required to enroll under the waiver. Enrollees were required to file a Notice of Intent (NOI), which included a map of their operation, a statement of farm water quality plan completion, education certificates, and a MP checklist of current and planned implementation. The Central Coast Regional Water Board's enrollment management

system captures and maintains all the NOI information for active use in management decisions, inspections, and determining enrollment compliance.

To ensure that all enrollment information is accessible, accurate, and organized, the Central Coast Regional Water Board staff created an enrollment management system and maintains the system on a daily basis. The system incorporates a series of procedures for tracking incoming/outgoing mail and correspondence, database entry, and hard-copy filing. The Central Coast Regional Water Board is able to generate reports, create mass mailings to enrollees, determine program compliance, and track enrollment changes over time.

In addition, in the Central Coast region, grant priorities are closely aligned with the Irrigated Agriculture Program. As part of the Conditional Waiver for Irrigated Agricultural Lands, growers are required to complete a farm plan that highlights MPs that they are implementing, or will implement to improve their farm water quality. To help growers implement practices identified in the farm plan and also meet the requirements of the Irrigated Agriculture Waiver, the Central Coast Regional Water Board has awarded many grants to various technical agencies, including several county Resource Conservation Districts, the Agriculture and Land-Based Training Association (ALBA), Community Alliance with Family Farmers (CAFF), UC Cooperative Extension, and others. These technical agencies work directly with growers to implement agricultural MPs to improve water quality. Some examples of the types of MP's that are currently being implemented by grants, to improve agricultural water quality include:

- Vegetated treatments systems
- Hedgerow plantings
- Critical area plantings
- Grassed/vegetated waterways
- Bank and channel stabilization
- Sediment basins, and
- Filter strips; and riparian plantings

Central Valley Region

The Central Valley Region has more than seven million acres of cropland under irrigation, 38 counties within its boundaries and more than 28,000 individuals and operations generating wastewater that fall into the category of “discharges of waste from irrigated lands”. There are thousands of miles of surface waters that are, or may be affected by discharges of waste from irrigated lands, lands where water is applied to produce crops including, but not limited to, land planted to row, vineyard, pasture, field and tree crops, commercial nurseries, nursery stock production, managed wetlands, rice production, and greenhouse operations with permeable floors. Under the Central Valley Irrigated Lands Regulatory Program (ILRP) the IRLP waiver requires dischargers to enroll in the in the program either as individuals or through a “third-party coalition group”.

The Central Valley Region can be conceptually divided into four ‘Zones’ for the purpose of understanding this extremely vast area (see Figure 1). These ‘Zones’ are generally considered to be based on distinctions that are geographic and that result in variations in topography, hydrology and crop type.

Zone 2 includes parts of the San Joaquin, Contra Costa, Alameda and Calaveras counties and the Delta, covering approximately 998,000 acres with approximately 545,000 that are considered irrigated lands. Participants in the ILRP within Zone 2 include the San Joaquin and



Delta Water Quality Coalition and two Irrigation Districts – a small portion of the Oakdale Irrigation District and the entire South San Joaquin Irrigation District. The four major drainages in Zone 2 are the San Joaquin River, Stanislaus River, Calaveras River and Mokelumne River.

Zone 3 is essentially the San Joaquin River Drainage. It includes the irrigated lands within the geographic areas represented by the East San Joaquin Water Quality Coalition and the Westside San Joaquin River Watershed Coalition. The geographic boundaries of the East San Joaquin Coalition extend from the Stanislaus River on the north to the east-west stretch of the San Joaquin River on the south. The East San Joaquin Coalition provides coverage of approximately 1.2 million acres of irrigated lands.

The Westside Coalition is comprised mostly of water districts (17 water agencies) that collectively formed a coalition group along with several managed wetland areas (state and federal wildlife refuges or management areas) and some individual dischargers who are not water district members. The Westside Coalition geographic boundaries encompass about 500,000 acres of irrigated lands under the waiver, and also includes an additional 97,000 acres of irrigated lands under a waste discharge permit.

Zone 4 encompasses the entire Tulare Lake Basin including portions of Fresno, Kings, Tulare and Kern counties. The Coalition Groups that are active in this area are the Westlands Coalition and the Southern San Joaquin Valley Water Quality Coalition. Water from the Sacramento-San Joaquin Delta is imported into the region through the California Aqueduct for both agricultural and urban purposes. Federal Central Valley Project (CVP) water is also exported from the Delta through the San Luis Canal to agencies with federal water contracts on the west side of the valley, such as Westlands Water District. On the eastern side of the valley, the CVP's Friant-Kern Canal runs south along the foothills and transports San Joaquin River water to agencies along the valley's eastern side and extends into Kern County.

The Central Valley Region of California is an intensely agricultural area. The intensity or the size alone would be difficult enough, but together, they present a never ending set of the challenges which this regional board's Irrigated Lands Regulatory Program takes in stride.

Monitoring and Reporting Requirements

On 25 January 2008, the Central Valley Regional Water Quality Control Board (Central Valley Regional Board) adopted Order No. R5-2008-0005, a Monitoring and Reporting Program (MRP) for Coalition Groups, which requires Coalition Groups to revise their MRP Plans within six months of the adoption of the Board Order. The submittal of an acceptable MRP Plan that meets the requirements of this new order is a condition of the Coalition Group Conditional Waiver, amending Order No. R5-2006-0053. Additionally, if an acceptable MRP Plan is not submitted, the Executive Officer will direct staff to develop a Coalition-specific MRP Plan that shall be implemented by the Coalition Group(s).

A Monitoring Design Guidance document was developed by the ILRP Technical Issues Committee and Southern California Coastal Water Resources Program (SCCWRP) to describe monitoring design principles and approaches for the development of a Coalition-specific Monitoring and Reporting Program Plan (MRP Plan). This guidance document was posted on the Central Valley Water Boards website and included flow diagrams that illustrated the decision-making steps that should be followed at various steps of developing and implementing the MRP Plan.

Based on the ILRP monitoring conducted from May 2004 through October 2006, in 2007 the monitoring information was presented through a Zone Report and provided a general understanding of the baseline water quality conditions in many Central Valley areas of irrigated agriculture. As a result of the success of this workshop, a second monitoring workshop is currently being considered for 2009-2010.

Long Term Program Environmental Impact Report (EIR)

The Central Valley Regional Water Board has adopted regulatory requirements for discharge from irrigated lands (tailwater, water from underground drains, operational spills, stormwater runoff) under the Conditional Waiver. These regulatory requirements are considered part of an interim program for regulation of discharges from irrigated agricultural lands. The Central Valley Regional Water Board is currently developing a long-term strategy for regulating discharges from agricultural lands to protect waters within the Central Valley.

The Central Valley Regional Water Board staff held a series of public workshops to gather stakeholder input related to the development of the long-term Irrigated Lands Regulatory Program. The workshops were held in Tulare, Modesto, Sacramento and Durham. Regional Water Board staff has also initiated follow-up meetings (late 2008 or early 2009) and is gathering additional information based on the long-term ILRP public workshops.

At a December meeting the Workgroup discussed draft organization, rules, and procedures that were developed from recommendations received at the first Workgroup meeting. The Workgroup will also be discussing the technical details of developing long-term program alternatives and evaluation measures.

Enforcement Actions

The Central Valley Regional Water Board has conditionally waived the requirements to submit a report of waste discharge (RWD) and to obtain WDR's for owners and/or operators of irrigated lands who have knowingly elected to participate in a Coalition Group that complies with the *Conditional Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands*. If growers do not obtain regulatory coverage for their waste discharges under a Coalition Group or Individual Irrigated Lands Conditional Waiver, they must file a RWD and filing fee with the Regional Water Board office to obtain a grower-specific permit (also referred to as WDRs).

In order to implement the Conditional Waiver and to provide accountability, it is necessary for the Central Valley Regional Water Board to receive information identifying the dischargers who have complied with the Waiver Conditions by electing to participate in a Coalition Group. The Coalition Groups are required to maintain and annually submit an electronic list of landowners and/or operators of irrigated lands that discharge waste to waters of the State.

The California Rice Commission (CRC) has formed a commodity specific Coalition Group under the program. The CRC does not provide a list of participants as California Food and Agricultural Codes have identified the name and address of members as confidential. However, all rice growers in the Sacramento Valley region are mandated to participate in the CRC.

The Central Valley Regional Water Quality Control Board adopted Resolution No. R5-2006-0077 on 3 August 2006, which amended Order No. R5-2006-0053,



Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands to include conditions under which an owner or operator of irrigated lands may join a Coalition Group after the deadline of 31 December 2006.

Throughout the year, ILRP Staff attend stakeholder and growers meetings to provide updates to stakeholders and Coalition members on the Central Valley Regional Water Board's enforcement efforts, to describe the new monitoring program for the ILRP and the development of Management Plans. As part of its plan to increase enforcement, the ILRP staff will increase its field presence and enforcement against unauthorized discharges that impact water quality in the Central Valley. Enforcement efforts across the program will be increased in the coming year to ensure that commercial irrigated agricultural operations do what is needed to protect water quality.

California Water Code Section 13267 Orders

The Central Valley Regional Board uses CWC 13267 Orders to help gain compliance to the Waiver membership requirements and are sent out to a focused list of non-complying landowners or potential irrigated agricultural parcel owners who are not currently Coalition group participants.

The CWC 13267 Order requires landowners to provide information regarding their property and to indicate why they are not participating in the ILRP. Staff then conducts follow up on the issued orders. The Central Valley Regional Water Board Executive Officer continues to issue these orders, approximately every 2-3 weeks to increase participation in the ILRP.

Staff also identifies landowners who have submitted Technical Reports stating they have joined a Coalition Group but potentially have not, as well as landowners who have failed to pay fees to renew their memberships. Further investigation and coordination with Coalition Groups provides verification of membership status of these landowners before taking enforcement steps.

Administrative Civil Liability Complaints

The Central Valley Regional Water has increased its efforts to enforce its ILRP. In the Fall of 2007, when five landowners failed to respond to the CWC 13267 and return the attached one-page technical report, which would allow the Regional Water Board to assess the operations and need for compliance, the Board issued first-of-its-kind Administrative Civil Liability (ACL) complaints to landowners in Colusa, Glenn, Sutter and Merced counties with penalties of \$3,000 each.

Data Management

The Conditional Waiver requires the implementation of a monitoring and reporting program (MRP) and set forth in MRP Order No. R5-2005-0833. Regional water quality data from the Surface Water Ambient Monitoring Program, the Stormwater Monitoring Program, NPDES Receiving Water Monitoring Reports and other monitoring programs have identified waters of the State with impaired water quality that appears attributable to or influenced by agriculture in areas of irrigated lands.

Semi-Annual Monitoring Reports (SAMRs) continually increase the already vast amount of data collected and submitted by the Coalition Groups. The manual entry, formatting and upload of

water quality monitoring data to the California Surface Water Ambient Monitoring Program (SWAMP) comparable database format is a continuous priority for Monitoring and Assessment Unit Staff. This activity must take place for the ILRP dischargers that do not yet submit SWAMP comparable electronic data deliverables – a majority of the coalitions and individual dischargers. At this time (February 2008), only two coalitions submit their data in the correct format. Staff continues to meet with State Water Board SWAMP data management representatives to coordinate efforts and maintain comparability. Staff also serves as informational and technical support to ILRP Dischargers who wish to continue providing SQMAP comparable electronic data deliverables.

Staff has been working closely with the newly formed Region 5 SWAMP Data Center at UC Davis. Discussions have been focused on the initiation of transferring completed datasets to a centralized location for upload into the California Environmental Data Exchange Network (CEDEN). The first set of data was planned to be transferred to the Data Center at UC Davis prior to the close of the year. These efforts demonstrate a newly formed and long lasting collaboration of the ILRP program with SWAMP and CEDEN to add to the collective water quality data shared throughout the State. Regional Board staff submitted 71 total reports; of which 16 were submitted to the Regional Board electronically by the stakeholder, 1 submitted electronically by the Contractor and 53 submitted as paper reports.

It is important to note that the newly approved and adopted Monitoring and Reporting Program for the Irrigated Lands Regulatory Program includes requirements for Coalitions and Individual Dischargers to submit their monitoring data in a SWAMP-comparable format. If these submittals are not made in the appropriate format, the data/reports will be considered out of compliance. Notification will be provided to the submitting entity of the violation. A short period of time will be granted to come into compliance. If the necessary corrections are not made within the required time period, enforcement steps will be taken by the ILRP's Enforcement unit.

In an effort to facilitate compliance for all submitting groups, Regional Board staff is providing a training workshop (Summer 2008) for stakeholders and Coalition Group representatives on the required SWAMP comparable format.

Technical Issues Committees

There are several ILRP Coalitions that are engaged in the process of developing Management Plans for *e. coli* exceedances which have occurred during the last three years of monitoring. There are various technical questions associated with the source identification portion of Management Plan development that are very challenging. ILRP Regional Board staff attended a meeting, organized by the Westside and the Sacramento Valley Water Quality Coalitions, to communicate with Coalition representatives regarding Management Plan development for *e. coli*. A two-pronged approach was discussed, which included the development of a Pathogen Focus Group of the Technical Issues Committee.

The initial membership of the new Focus Groups was largely that of those Coalitions which are engaged in the Management Plan development, as well as some representation from UCCE and drinking water interests. The first meeting was held in December 2007. A follow-up meeting in January 2008, included a presentation by Mike Johnson regarding the findings from his preliminary source identification studies conducted for some of the Coalitions and was open to all interested parties.

As the number of required Management Plans region wide continues to grow, with approximately 300 waterbody/parameter combinations, Regional Board staff and stakeholders agreed to shift the focus of the TIC meetings to the development and implementation of all Management Plans, which will include the pathogen issues.

Memorandum of Understanding (MOU) Butte and Glenn Counties

The Memorandum of Understanding (MOU) is an agreement between the Central Valley Regional Water Board, the State Water Board, the California Department of Pesticide Regulation (DPR), and the Agricultural Commissioners of Glenn and Butte Counties. It created what is known as the Pilot Program for the Central Valley Regional Water Board's ILRP, and the specific activities that take place in support of the ILRP.

The original MOU was signed in June 2005, and it was renewed in June 2007, extending the Pilot Program for four years. The MOU requires that staff liaisons from the Regional Water Board and the agricultural commissioners of Glenn and Butte Counties submit quarterly reports of the activities performed under the contract and include any recommendations to improve the Pilot Program. These activities include observation and communication activities such as:

(1) inspections of watershed monitoring locations; (2) inspections of monitoring locations where data indicate that water quality objectives have been exceeded; and (3) assisting in identification of sources of water quality violations. In accordance with their contract the liaison staffs are also involved in such things as public education, public outreach, and reporting to the agricultural commissioners and Central Valley Water Board on the results of their activities along with recommendations for alternative approaches and strategies. The liaison staffs perform oversight oriented tasks only, and do not engage in enforcement activities unless they are already authorized under DPR's existing authority to regulate and enforce on pesticide issues. The agricultural commissioners then refer appropriate matters to the Coalition Groups, DPR, and the Central Valley Water Board in a timely manner.

The Agricultural Commissioners will be expanding work performed under the MOU Pilot Program to the neighboring counties and the Regional Board staff will continue the efforts on the ILRP objective of documenting MPs and their effectiveness in protecting water quality. Work performed for the MOU Pilot Program is continuing to change as the ILRP evolves and Management Plans are being implemented to address water quality issues.

Los Angeles Region

During this reporting period, the Los Angeles Regional Water Board NPS Program focused on implementing the Los Angeles Region Conditional Waiver for Irrigated Lands (Conditional Waiver)(Order No. R4-2005-0080). The Conditional Waiver Program requires agriculture dischargers to conduct water quality monitoring. Currently, monitoring is done on a group basis for constituents such as nutrients, pesticides, salts and toxicity at 37 monitoring sites located in agricultural areas throughout the Los Angeles region.

In February 2008, discharge groups in both Los Angeles and Ventura Counties submitted their Annual Water Quality Monitoring Reports to the Regional Board. Staff reviewed the reports and provided comments to each discharger group. The results of water quality monitoring in both Los Angeles and Ventura counties demonstrated exceedances of water quality benchmarks established in the Conditional Waiver and staff met with representatives of each group to discuss the results of the first year of water quality monitoring and program improvement

strategies. As required, each group will develop Agriculture Water Quality Management Plans (WQMP's), which will include the implementation of MPs to mitigate the exceedances.



Additionally, after reviewing the first year's monitoring report, staff decided to revoke the alternative monitoring requirements (i.e. Integrated Pest Management for the vineyard group). Staff will work with this constituency to submit a new monitoring report and Quality Assurance Project Plan for regular monitoring requirements. The second annual monitoring report may be delayed as a result of the revised monitoring requirements.

Many growers have attended water quality education courses required by the Conditional Waiver. Growers in the Los Angeles Region have completed a combined total of 11,187 hours of required water quality education with NPS staff approving 13 education workshops for continuing education requirements. The ongoing goal is to increase the enrolled representative acreage completing the education requirements in Ventura County from 90% to 100% and from 20% to 40% for Los Angeles County.

Enforcement

Los Angeles Regional Water Board staff continued outreach efforts to enroll growers under the waiver either as individuals or members of the discharge groups. The Regional Board sent out 400 NOVs to growers in Ventura County who had not yet enrolled in the Conditional Waiver program and an additional 700 NOVs were sent out to non-enrolled growers in Los Angeles County in early 2008. Regional Board staff has responded to over 400 phone calls and hundreds of e-mails from agricultural growers. Of these, numerous growers requested enrollment forms and this has resulted in a 72% enrollment of irrigated acreage Region-wide.

Staff continues to participate in meetings and workshops to update the agriculture community on the progress and requirements of the Conditional Waiver program. The Regional Board has participated in the Family Day 2007, sponsored by Pacoima Beautiful and the 3rd Annual Green Port Fest, sponsored by the Port of Long Beach. Both events provided an opportunity for the Regional Board to showcase its programs and accomplishments and to strengthen its ties with community members, as well as local and state officials, the regulated and environmental communities and its sister agencies. During the two events, education pamphlets, coloring books, pencils and posters were distributed to over 8,400 individuals.

Santa Ana River Region

The Regional Water Quality Control Board, Santa Ana Region (Santa Ana Regional Water Board) is developing a Condition Waiver of Waste Discharge Requirements for waster discharges from various types of agricultural operations in the Lake Elsinore/San Jacinto Watershed. Regional Board staff has determined that in the Lake Elsinore/San Jacinto Watershed, waster discharges from a variety of sources are contributing to pollution in Canyon Lake and Lake Elsinore, and causing violations of water quality standards.

The Non-point source (NPS) pollutants responsible for these violations are discharged from urban areas, open space, agricultural activities (i.e. include, but not limited to irrigated agricultural lands), transportation facilities and other land uses in the watershed.

In response to these violations, the Regional Board adopted a Total Maximum Daily Load (TMDL) for Canyon Lake and Lake Elsinore. The TMDL is now part of the Basin Plan. The TMDL includes a variety of tasks that need to be completed in order to achieve the TMDL's objectives. The TMDL assigns key individual stakeholders or

Groups of stakeholders in the watershed with the responsibility for implementing these tasks. The TMDL requires water quality monitoring plans, to gauge the effectiveness of the management plan. The TMDL also requires stakeholders to develop problem-specific management plans, such as for nutrient management. Regional Board staff is proposing that all operators of irrigated or dry-farmed land enroll in a conditional waiver of waste discharge requirements. The Regional Board is calling their program the Conditional Waiver for Agricultural Discharge (CWAD). The conditional waiver will allow agricultural operators to continue to discharge waste to waters of the state from their farming operations. The CWAD program will require participants take steps to comply with the TMDL, pay implementation fees and implement best management practices (BMPs) to reduce the pollutant load of their discharge.

The Conditional Agricultural Waiver will allow some conditions to be met through the collective action of a group or groups of agricultural operators who are enrolled in the program, or by a third party representing a group of enrollees. An example of a condition that could be met by a representative acting for a group of enrollees is a monitoring and reporting condition. The representative could obtain the required information for the group it represents and report the information to the regional board. Agricultural operators who do not enroll in the Conditional Agricultural Waiver will be required to apply for individual waste discharge requirements, and will have the full responsibility of compliance.

Regional Board staff attended a meeting of State and Regional Board ILRP contacts in which Regions 3 and 4, along with the State Water Board, provided information to Regions 8 and 9 contacts in an effort to help begin the design and/or implementation of their respective ILRP programs and associated conditional waiver. On August 15, 2008, Regional Board staff participated in the ILRP Roundtable in Rancho Cordova. Regional Board staff is currently coordinating with State Water Board and Region 9 staff to put on enrollment and education workshops in Orange and Riverside counties (November 6, 2008 in San Diego). Also, Regional Board staff are in the process of putting enrollment and education materials on their website.

San Diego Region

At the 10 October 2007 Board meeting, the San Diego Regional Water Board adopted Resolution No. R9-2007-0104 amending the San Diego Region Basin Plan to renew and issue revised conditional waivers. The revised conditional waivers are set to go into effect upon approval by the State of Administrative Law.

There were 35 (26 existing and nine new) types of discharge for which the San Diego Water Board would waive the requirement to file a RWD and adopt conditional waivers of WDRs. Rather than developing conditional waivers for each specific type of discharge, an integrated

approach was developed to simplify the conditional waivers. Types of discharge that are similar in nature or originate from a common setting or operation were grouped together into a “discharge classification.”

The Conditional Waiver No. 4 – Discharges from Agricultural and Nursery Operations requires all commercial agricultural and nursery operators in the San Diego Region to enroll under the waiver by January 1, 2011. The types of discharges included in this conditional waiver are:

- Discharges of plant crop residues to land;
- Discharges of storm water runoff;
- Discharge/application of amendments or mulches to soil;
- Discharges of agricultural irrigation return water;
- Discharges of nursery irrigation return water; and
- Discharges of green wastes to composting operations.

Included in the general requirements of this waiver are implementation of “Best” Management Practices” (BMPs) to control pollutant discharge, as well as monitoring and reporting.

The Conditional Waiver No. 3 – Discharges from Animal Operations was also adopted and includes the following discharges:

- Discharges from medium animal feeding operations (300-999 animal units);
- Discharges from small animal feeding operations (less than 300 animal units);
- Discharges of storm water runoff;
- Discharges of manure to composting operations;
- Discharge/application of manure to soil as an amendment or mulch; and
- Discharges from grazing lands.

San Diego Regional Water Board staff presented an overview of the requirements of the waivers at growers' workshops in San Diego County in March and June 2008. Staff is currently coordinating with staff from Regional Boards 4 and 8 to organize and participate in similar workshops in Orange and Riverside counties. This coordination with other Regional Boards has proven to be exceptionally helpful in expanding the program effectiveness, membership requirements, and increasing the level of outreach to stakeholders.

Staff has also been coordinating efforts with the Mission Resource Conservation District, the UC CE, local Farm Bureaus and other agencies by participating in free workshops for growers. Some of the important focuses for this last year agriculturally, and in the coming years, were the education of growers on MPs and strategies to help them deal with the 30% water cutbacks implemented on January 1, 2008.

Other Agricultural Programs: Moving Into New Efforts

Grazing Waivers



In August 2007, NPS staff from the San Francisco Bay Regional Water Board held a public meeting at Point Reyes Station, which was attended by about 70 stakeholders. At this meeting, Regional Board staff discussed the need for regulation, making it clear that the Water Board had the obligation to regulate grazing operations in order to implement the Tomales Bay

Pathogen TMDL and the NPS Implementation Policy. Subsequently, Board staff convened and met several times (between October 2007 and June 2008) with a technical advisory group comprised of representatives from the UCCE, the Natural Resources Conservation Service, the Marin County Resource Conservation District, and the Western United Dairymen, to ensure that proposed waiver conditions were reasonable, feasible, and protective of water quality. On June 11, 2008, Board staff held another public workshop at Point Reyes Station, where the tentative waiver language and the appropriate means to comply with the proposed waiver were discussed, and formal public comments were taken. It is anticipated the San Francisco Regional Board will adopt the Conditional Waiver of WDRs for Grazing Operations in the Tomales Bay Watershed during their July 2008 meeting.

To comply with the Waiver of WDRs, grazing facilities' landowners/operators will be required to submit to the Regional Water Board an NOI that the landowner/operator intends to comply with the requirements of the Waiver of WDRs. The NOI will be due on January 31, 2009. Landowners/operators must then complete a Ranch Water Quality Plan by November 15, 2009, comply with all conditions of the waiver, and report annual progress on implementation of grazing management measures that reduce or eliminate water quality problems.

NPS Efforts in Vineyards

To implement the Napa Sediment TMDL, San Francisco Bay Regional Water Board staff is working in the development of a waiver of WDRs for vineyards, and has held a few meetings with stakeholders. During the last five years, Board Staff has been actively involved in the Fish Friendly Farming Program, which has, so far, enrolled seven to eight thousand acres of vineyard land (20-25 % of agricultural land) under the program. The goal of the vineyard waiver is to build institutional capacity to enroll 80% or more of agricultural acreage in the area.

Waste Discharge Requirements for Dairies

San Francisco Bay Regional Water Board staff performed dairy inspections during the winter and the spring, to ensure compliance with existing regulations. One of the dairies covered under WDRs made significant management improvements at the facility and is now eligible for coverage under the Waiver of WDRs for Confined Animal Facilities.

In the Central Valley Region, most dairies have historically operated under a conditional waiver of WDRs adopted in 1982 (Resolution No. 82-036). The waiver expired on January 01, 2003 pursuant to CWC section 13269. The new Existing Milk Cow WDRs General Order #R5-2007-0035, adopted on May 03, 2007, applies to most, but not all, of the 1,500 existing dairies in the Region. Any new dairies that went into operation after October 17, 2005 or facilities that expand in size after that date were required to obtain individual WDRs. If it is determined that a facility needs an NPDES permit, this Order will be replaced by such a permit. The General Order requires the preparation of a Waste Management Plan that addresses the production area and a Nutrient Management Plan that addresses the land application areas. Because of the extent of work required, there is a timetable that allows phased development and implementation of plans and necessary improvements. All changes must be in place by July 2012.

As is required under the General Order, hundreds of annual reports have now been received in both the Sacramento and Fresno Regional Water Board offices. These annual reports were due prior to the July 01, 2008 annual deadline. Regional Water Board staff will now begin the arduous task of reviewing and providing comments to these dischargers. Additionally, in an effort to help answer questions regarding the new requirements, on June 11, 2008 Regional Board staff posted on their website an FAQ regarding the Dairy Waste and Nutrient Management Application.

Cleaning up the Legacy of Mining in California

The Central Valley Regional Water Board is working to address environmental issues from the historic, but polluted gold mine at the Empire Mine State Park in Grass Valley California under the agencies' first-ever multi-agency enforcement order. Working with the Department of Toxic Substances Control (DTSC), California Department of Parks and Recreation (CA DPR) and Newmont USA Limited (Newmont), a Cleanup and Abatement and Partial Consent Order was signed. The unique agreement combines the regulatory authority of the Regional Water Board and DTSC into a single order to simplify compliance. It also provides for the Regional Water Board and DTSC to receive cost reimbursement for project oversight.

The Empire Mine State Park's environmental issues stem and literally flow from the historic mining wastes and operations that contain arsenic, lead, and other metals. Identified areas of initial concern include a remnant mine waste stockpile, a large tailings impoundment, and a drain tunnel discharge known as the Magenta Drain. Controlling dust exposure for trail users and storm water pollution from the tailings are major goals of the current effort. CA DPR and Newmont are also investigating the drain tunnel and possible remedies for the discharge into Wolf Creek.

Summer work activities related to field reconnaissance, sample collection, characterization, and evaluation of mine and mill related materials began in September 2007. Newmont, in coordination with CA DPR, is conducting the work. Areas for 2008 field work include the Sand Dam Area (tailings and waste rock materials), Stacy Lane Pond (tailings and waste rock materials), the Conveyance Corridor (tailings and waste rock materials), historic mine and mill sites (characterization and evaluation), and the historic Grounds Area (delineation of potential mine and mill materials). Newmont expects to complete the field work and data analysis by the end of 2008. Priority action evaluations and alternatives analysis for each area is anticipated to follow in 2009.

Cleanup of Mercury Mines as a Result of TMDL Implementation

In 2005, the Central Valley Regional Water Board adopted a mercury TMDL and Basin Plan amendments for implementation of mercury cleanup plan for the Cache Creek watershed. The State Water Board and USEPA approved the TMDL and Basin Plan amendments in 2006. These actions and perseverance by Regional Board staff to pursue cleanup of two major mercury mines in the upper watershed resulted in a significant cleanup project of the Abbott and Turkey Run mercury mines in the summer of 2007. Staff involved USEPA cleanup staff in the remediation of the mine sites. USEPA was able to find a company tied to mine ownership and then worked with the responsible party and their construction contractor to complete the work.

The Abbott and Turkey Run mercury mines are at the headwaters of Harley Gulch, a tributary to Cache Creek. Mercury from these and other mines has contaminated many miles of Cache Creek, resulting in mercury methylation and bioaccumulation in aquatic life, which has caused elevated levels of mercury in fish that are consumed by humans and wildlife. In addition, mercury from the Cache Creek watershed contributes to methylmercury production in wetlands in the Yolo Bypass.

The remediation project stabilized an estimated 20,000 pounds of mercury and 400,000 cubic yards of mine waste by grading the surface to remove very steep slopes and relocating wastes. Mine



wastes were pulled back from Harley Gulch. The wastes were covered with two feet of clean material and the contractor built surface water run-on and run-off controls to protect the cap and reduce erosion and slope failure. The old mill processing buildings, 30-ton rotary furnace, bricks, and other hazardous materials were removed from the site and either shipped to a disposal site in Nevada or sent to mining museums. In addition, runoff from a spring at Turkey Run was diverted around mine wastes.

There are other mercury mines in the cache Creek watershed, and Regional Board staff will be working towards their cleanup in the future. However, Abbott and Turkey Run were by far the largest mercury contributors to the ecosystem.

Timber Waiver Policy

The North Coast Region

The timber harvest review program in the North Coast Regional Water Board continues to implement its waivers and general WDRs adopted in 2004. Specifically, the waiver for timber harvesting activities on US Forest Service (USFS) lands (due for renewal in April of 2009) continues to be a useful tool for regulating those activities and triggering additional monitoring based on the potential for cumulative impacts. The USFS performs a watershed level cumulative effects assessment when a project is developed. The waiver requires that if a project is estimated to cause a watershed to exceed a cumulative effects threshold, or if the watershed is already above a threshold, then additional conditions are placed on the USFS, including monitoring to document conditions and impacts from the project.

Regional Board staff has a good working relationship with the USFS and a successful approach to addressing timber harvesting activities that will be expanded to TMDL and NPS implementation in the Scott and Shasta River watersheds. Using those two watersheds as pilots, the intent is to develop a regulatory mechanism (waiver or WDR) to address all NPS activities on USFS lands. While keeping the other forests in the loop, Regional Board staff is working most actively with the Klamath National Forest, and plan to have a mechanism in place for that forest within a year.

The conditional waiver of WDRs for non-federal lands is intended for low impact operations, and has had slightly increasing participation since its adoption in June of 2004, with around 35 operations enrolled in FY 2007-08. A total of about 115 waivers have been issued in the four-year period since its adoption. Both non-industrial timberland owners and industrial landowners have enrolled harvest plans that meet the stringent requirements of the waiver. This waiver is due for renewal in June of 2009.

The North Coast Region enrolls non-federal Timber Harvest Plans (THPs) that do not meet waiver criteria under a general WDR (GWDR) that was adopted in June, 2004. Enrollment numbers vary with the timber market, but approximately 144 THPs are currently under the timber GWDR in FY 2007-08. The GWDR requires an erosion control plan that lists and prioritizes sediment sources for remediation during the plan's life, along with implementation and effectiveness monitoring, and discharge notification process. The program is successful in addressing sediment impacts from individual plans, and Regional Board staff is transitioning into development of ownership-wide and/or watershed-wide WDRs to address cumulative impacts.

The waivers and GWDRs cover only sediment discharges, so Regional Board staff is addressing water temperature concerns (TMDLs and otherwise) through the review and comment process. At some point in the future, water temperature concerns may also be addressed through a waiver or GWDR process.

The Lahontan Regional Water Quality Control Board

The vegetation management and timber harvest review program in the Lahontan Regional Water Board continues to implement its waiver as adopted in February 2007. During the time frame between July 2007, and September 2008, 212 Timber Waivers were submitted to the Regional Board office to cover projects that ranged in scope of activity from lot clearing for conversion of timbered property for single family home construction to multiple thousand acre projects for commercial timber harvest on private lands. The USFS also enrolled numerous projects (24) under the Timber Waiver during this time period. USFS projects also covered a variety of timber and vegetation management activities, including hazard tree removal in recreation areas and along roads, riparian hardwood community restoration projects, fuel reduction projects, and commercial timber sales.

In June of 2007, there was a wildfire on Angora Ridge adjacent to the community of South Lake Tahoe that burned approximately 3,000 acres of forest and 254 houses along the urban fringe. The governors of California and Nevada responded to the wildfire and the social impacts of the catastrophe by assembling the California-Nevada Tahoe Basin Fire Commission (Fire Commission) to assess whether regulatory constraints prevented fuel reduction activities from being implemented within the Tahoe Basin. The Fire Commission submitted a report to both governors that contained numerous findings and recommendations. The California governor issued a proclamation in May 2008, directing the Lahontan Water Board to amend the Timber Waiver to facilitate fuel reduction activities within the Tahoe Basin. Water Board staff are in the process of revising the Timber Waiver to address many of the Fire Commission's recommendations consistent with the CWC and the Basin Plan for the Lahontan Region.

Areas of particular focus in the proposed revised Timber Waiver are streamlining the permitting process for fuel reduction activities, both within the Tahoe Basin and throughout the Lahontan Region. The proposed Timber Waiver will be presented to the Lahontan Water Board for action at the January 2009 Board hearing.

The revised Timber Waiver will streamline the permitting process for a variety of vegetation management activities that were determined to have less than significant impacts to water quality, if mitigation measures were incorporated into the project. Reduced monitoring requirements will also be allowed for more benign projects. Projects that are determined to have greater potential to impact water quality will have implementation, forensic, and effectiveness monitoring depending on the proposed project. The revised Timber Waiver will cover both commercial and non-commercial activities on private and public lands within the Lahontan Region.

The Fire Commission also recommended that only one regulatory agency, the Tahoe Regional Planning Agency (TRPA), issue permits for timber and vegetation management activities within the Tahoe Basin. In response to this recommendation Regional Board staff have circulated a waiver for the requirement to submit reports of waste discharge or enroll under the Timber Waiver for project proponents who submit a permit application to the TRPA for fuel reduction activities in the Tahoe Basin. The associated resolution will be considered for adoption by the Lahontan Regional Water Board at its October 2008 meeting. The Regional Board will also

consider whether to authorize the Executive Officer to enter into an MOU between the Lahontan Water Board and the TRPA which designates the TRPA as the primary permitting agency for fuel reduction activities in the Tahoe Basin.

The San Diego Region

On October 10, 2007, the San Diego Regional Water Board adopted an amendment to its Basin Plan to revise and renew the conditional waiver of waste discharge requirements for silvicultural operations (including timber harvesting, timber management, vegetative manipulation, fuels management, road construction, and watershed management) on federal and non-federal lands. Owners and operators of silvicultural operations must comply with the waiver conditions to be eligible for the waiver of waste discharge requirements. If the waiver conditions cannot be met, or if the San Diego Regional Board determines a potential threat to water quality exists from a silvicultural operation, the owner or operator must submit a report of waste discharge and receive waste discharge requirements. The conditional waiver will become effective upon approval by the State Water Resources Control Board (Board hearing scheduled for October 2008) and subsequently by the Office of Administrative Law.

Strategic Collaboration

The NPS Program works with approximately 20 other State agencies that have authorities, programs, or responsibilities relating to the control of NPS pollution. The success of a sustainable effort to protect and restore the quality and environment of the State's waters relies on staff's ability to build cooperative partnerships with these agencies as well as stakeholders. Coordinating and focusing such a large number of entities to produce an effective NPS program in a state as large and geomorphologically diverse as California poses unique and difficult challenges. The challenge is to effectively target our NPS efforts from both a water resources (e.g., water quality, geographic, or watershed area) and economic resources perspective while at the same time increasing stakeholder support. While increased use of regulatory authorities can help to address these challenges (such as the authorities described in the NPS Implementation and Enforcement Policy), a wide range of tools, activities, and authorities are drawn upon to address NPS pollution statewide.

The Inter-Agency Coordinating Committee

The Water Boards and CCC have established an Inter-agency Coordinating Committee (IACC) to provide a regular forum to collaborate NPS implementation and problem solving. The NPS Program works with IACC agencies to find opportunities for improved coordination, identify instances where impediments to effective management occur, and to devise responses to move toward enhanced performance and management. The NPS Program can then tackle the challenge of collecting assessment and tracking information, coordinate activities to reduce duplication, and work collectively to make sure that one agency's activities do not cause issues with other agency's jurisdictional responsibility. Two subcommittees of the IACC are currently active:

Marinas and Recreational Boating Subcommittee

The primary focus of the Marina and Recreational Boating Subcommittee (Subcommittee) has been to prioritize and address the following seven marina-related priority issues/contaminants and related MMs over the next five years with respect to assessment, implementation and education: (1) bacterial issues/pathogens including sewage, vessel waste, and pumpout

stations; (2) copper boat paints; (3) invasive species; (4) gas, oil and grease; (5) stormwater runoff; (6) graywater; and (7) abandoned vessels.

Over the past year, the subcommittee workgroup has had presentations by the Port of San Diego, the DPR, and the Los Angeles and Santa Ana Regional Water Boards on the impact and geographical distribution of water and sediment pollution caused by antifouling paints (AFPs). In addition, the CCC completed a report on limited survey data from select mobile service companies in the Delta and Southern California on the extent of use of mobile sewage pumpout services. The results were too limited to draw conclusions, but it was clear that there is a substantial difficulty in disposing of sewage in marina environments, and the Subcommittee will discuss any next steps to deal with this issue. Finally, working with the Subcommittee, the University of California Seagrant is funding outreach and education efforts to the boating community on ways to balance invasive species prevention with water quality protection, and to provide a detailed cost analysis of the various fouling control strategies for recreational boats in California.

Collaborative Effort for Monitoring of Indicators of Antifouling Paint Pollution in Marinas

Antifouling paints are commonly relied upon to deter aquatic organisms (e.g., algae, shellfish, tubeworms, and barnacles) from attaching to boat hulls. AFPs function through the slow but continuous leaching of biocides from the painted surface into the paint-water interface where fouling occurs. AFPs that are used in California typically contain one or more of the following biocides: copper oxide, copper hydroxide, copper thiocyanate, zinc pyrithione, Irgarol, and Sea-Nine. In areas of high boat density (i.e. a marina), however, the use of these biocides could result in elevated concentrations of AFP-related contaminants. These contaminants may exceed water quality standards established for the protection of aquatic life or may lead to adverse effects on the local fauna and flora.

In 2006, the DPR with staff and financial support from the State and Regional Water Boards through the Marina Subcommittee initiated a water-column study to evaluate water quality indicators of AFP use in 23 California marinas. Between July and October 2006, DPR collected hundreds of samples from marinas and associated reference sites in saltwater, brackish, and fresh water areas. All of these samples were analyzed for copper, zinc, and suspended solids. These samples were also analyzed for water quality constituents needed as inputs into U.S. EPA's Biotic Ligand Model, which predicts fresh water toxicity, and a dissolved organic carbon (DOC) regression model, which predicts toxicity in marine environments. A smaller subset of marina water samples were analyzed for Irgarol, M1 (an Irgarol degradation product), toxicity tests, and toxicity identification evaluations (TIEs).

Results showed that concentrations of dissolved copper in marinas were frequently above water quality standards (California Toxics Rule), particularly in brackish and saltwater areas. Mean concentrations of dissolved copper were higher in marinas than the adjacent local reference sites for all 23 marina areas studied, indicating that marinas were localized hotspots for copper. An evaluation of sources within the marina strongly suggests that boat AFPs are likely the most significant sources of copper in the marina, particularly during periods of dry weather. Toxicity tests using a copper-sensitive test organism and endpoint occasionally showed a response. TIEs determined that copper was the likely cause of the observed toxicity.

The BLM Model predicted that there is very low likelihood of toxicity associated with the dissolved copper concentrations observed in the fresh water marinas in this study. The DOC Model predicted that toxicity associated with the dissolved copper concentrations observed could occasionally occur in some of the salt and brackish marinas in this study.

The AFP biocide—Irgarol was detected in all of the samples taken, often at concentrations that have been shown to produce deleterious sub-lethal effects on marine algae and plants. Elevated concentrations of zinc were also frequently observed in marinas although these concentrations never exceeded California's water quality standards for the metal. Based on the findings from this study and other AFP-related investigations, DPR made several policy decisions to address elevated levels of AFP-related constituents including plans to initiate the reevaluation of AFP pesticides currently registered for use in California.

California Wetland and Hydromodification Subcommittee

The NPS Wetland-Hydromodification Subcommittee has been involved in a variety of activities this year, mainly focused on getting better and more standardized assessing and monitoring of wetlands, and on better integration among state-funded wetland restoration projects. This year, through a \$900,000 grant provided in 2004, a number of wetlands monitoring programs have begun. In addition, a draft guidance document for a three-tiered assessment program was completed by partners in the Wetlands Demonstration Program (WDP). This year, the NPS program funded a pilot program to integrate the California Rapid Assessment Method (CRAM) with an ambient survey of state creeks and rivers. It is hoped that the project will demonstrate how CRAM and benthic invertebrate survey data can be used to generate a robust status and trends assessment. Based on this assessment, the SWAMP has included CRAM as a component in the current perennial streams assessment program. Assessment protocols have been used for 140 stream stations that were sampled, using a probabilistic station selection procedure.

This year, Version 2 of the wetland project tracker, an online tool providing a standard method to report wetland restoration activities, was completed and is accessible at www.wetlandtracker.org. Integration among a number of monitoring sources and programs is now occurring for central coast wetlands, where a region-specific database will be established. In addition, the WDP partners completed a landscape profile assessment of estuarine wetlands for all of California's perennially tidal systems. The landscape profile and wetland inventory data set establish a baseline from which future assessments of net change in acreage can be assessed. Finally, ten restoration projects in each of three California regions have also been assessed using CRAM, and the assessment information – useful for No Net Loss tracking – is publicly available on www.cramwetlands.org.



Critical Coastal Areas Program

The goal of the [Critical Coastal Areas](#) (CCA) program is to ensure implementation of effective and long-term NPS MMs to protect and restore water quality in coastal watersheds identified as CCAs. Representatives from 15 state agencies, two federal agencies (National Oceanic and Atmospheric Administration [NOAA] and U.S. EPA), the Ocean Conservancy and California Coastkeeper Alliance participate in the Statewide CCA Committee (CCA Committee), which oversees the program. The CCA Committee developed a Strategic Plan in 2002 that identified 101 coastal watersheds as CCAs. The CCA identification criteria reflect the dual goals of improving impaired water quality in coastal waterbodies, and providing extra protection from NPS pollution to marine areas of high resource value.

The CCA Committee selected five Pilot CCAs in 2005 for focused action – one in each region of the coast, and one in San Francisco Bay. These pilot CCAs serve as models of NPS MM implementation and watershed-based planning, and the lessons learned from the Pilots will be shared with CCAs throughout the coast. Eight public workshops were held coast-wide in the spring of 2005 to gather stakeholder input on the selection. The five pilot CCAs selected were:

- North Coast: Trinidad Head CCA, Humboldt County
- San Francisco Bay Area: James V. Fitzgerald CCA, San Mateo County
- Within San Francisco Bay: Sonoma Creek CCA, Sonoma County
- Central Coast: Watsonville Slough CCA, Santa Cruz County
- South Coast: Orange County CCA (combined Newport Beach/Robert E. Badham, Irvine Coast, Heisler Park, and Upper Newport Bay CCA's), Orange County

In 2006-7, CCA Committee members facilitated formation of Pilot Steering Committees for each of the CCA's, comprised of local stakeholders – including watershed groups, special interest organizations, and community members – and local, state and federal governmental agencies. Collaborative efforts are now underway in each of the five CCA's to develop a NPS Watershed Assessment and Action Plan. The first part will involve conducting an assessment that identifies and evaluates existing and potential NPS pollution impacts to coastal and marine resources, by compiling and analyzing available data. Afterwards, an Action Plan will be developed that identifies all the steps required to address NPS impacts and improve water quality conditions in the CCA's watershed, including application of appropriate MMs.

Proposition 50 Integrated Coastal Watershed Management Planning Grants

Two of the Pilot CCAs (Trinidad Head and Orange County) were awarded Proposition 50 Integrated Coastal Watershed Management Planning (ICWMP) grants in 2006. These grants, which culminate in 2008, funded watershed assessment and action plan development for each of these two Pilot CCAs.

The [Trinidad Head Pilot CCA](#) completed a draft of the [Trinidad Bay Integrated Coastal Watershed Management Plan](#) (ICWMP) in March 2008. The ICWMP, which includes both NPS Watershed Assessment and Action Plan components, is currently under review by stakeholders. The Trinidad Bay ICWMP will be incorporated into the city of Trinidad's planning documents (i.e., General Plan and Local Coastal Program). Additional public education and outreach efforts on stormwater pollution and water conservation are planned.

The Trinidad Bay Watershed Council formed in 2007 to facilitate implementation of the high priority Action Items identified in the Trinidad Bay ICWMP. The Council and other Trinidad Head Pilot CCA partners are now seeking additional grant funding to implement the top priority actions identified in the ICWMP's Action Plan.

The Orange County Pilot CCA Project (combining [Newport Beach/Robert E. Badham](#), [Irvine Coast](#), [Heisler Park](#), and [Upper Newport Bay](#) CCAs) used a portion of their Proposition 50 ICWMP grant to assess watershed and external impacts to the CCAs. This assessment included pollutant loading, source identification, and pollutant impacts. The grant project also included an intertidal ecosystem restoration component. This work will result in a plan of recommended actions to protect the CCAs, including the implementation of additional NPS MMs.

Clean Water Act 319(h) Grant and Proposition 50 Coastal Grant

The San Francisco Estuary Institute (SFEI) received a CWA 319[H] NPS Implementation Program grant in 2005 to assist with the watershed assessments for the three Pilot CCAs ([Fitzgerald Marine Reserve](#), [Sonoma Creek](#) and [Watsonville Sloughs](#) Pilot CCAs) in the San Francisco and Central Coast area. The first phase of this project was completed in December 2007, and SFEI's Critical Coastal Areas Phase 1 Final Report is available on SFEI's website. In 2007, SFEI was awarded a Proposition 50 Coastal Nonpoint Source grant for a second phase of their CCA supporting studies, entitled "Demonstration Project in Three Critical Coastal Areas Watersheds." Information about this project can be found on [SFEI's CCA Project](#) webpage.

Coordination Among State Agencies

The CCA Committee continues to provide a forum for sharing information among state agencies working to address the impacts of land use on coastal waters. At the May 1, 2008 CCA Committee meeting, several Committee members gave updates on their agencies' programs related to coastal water quality, including the CA DPR, California Coastal Conservancy, the Marine Life Protection Act Program of California Department of Fish & Game, the Areas of Special Biological Significance Program of the State Water Board, and the Proposition 84 grant programs of the State Water Board's Division of Financial Assistance. In upcoming meetings, the CCA Committee will discuss the value of strengthening the Committee's role as a continuing forum on coastal watershed planning, and ways to better structure this forum.

Updating the CCA List

The CCA Committee is in the process of revising the criteria for identifying Critical Coastal Areas, and completing a periodic update of the CCA list. At the June 4, 2008 CCA Committee meeting, the Committee discussed proposed revisions to the CCA identification criteria, as well as updating the CCA List to refer to the most recent (2006) CWA 303(d) list of impaired waters, plus additional clarifications and corrections. Meetings on this issue will continue in September 2008.

The California Water and Land Use Partnership

The California Water and Land Use Partnership (CA WALUP), is an informal partnership among state and federal agencies, and non-profits that have a strong interest in improving water quality in the State of California. The mission of CA WALUP is to improve water quality and supply, and to conserve natural resources through the protection of watershed integrity. The group seeks to accomplish this mission by providing technical information and practical tools to support informed land use decision-making at the local level. A balanced approach is supported in of protecting natural resources while still accommodating growth. To this end, CA WALUP addresses land use issues and promotes the use of integrated land use planning, community design, and site design strategies that serve to prevent or reduce the impacts of development on water resources. More information on CA WALUP can be found at <http://cawalup.usc.edu:3455/cawalup/Home>.

This year, a number of activities that move forward CA WALUP's mission were accomplished. On Jan. 25, 2008, a CA WALUP meeting focused on ways to better coordinate efforts on low-impact development (LID) for urban areas. The California Stormwater Quality Association (CASQA) has agreed to partner with CA WALUP, the Central Valley Regional Water Quality Control Board, and the CCC to provide consistent low impact development (LID) training

throughout the state. Currently, they are working to develop curriculum modules for training practitioners at all levels about various aspects of LID. A “train the trainer” course will subsequently be developed and delivered to members of CA WALUP and CASQA and other interested parties. In addition, seven collaborative subcommittees were formed, including: a CA WALUP Agreement Subcommittee; a Strategic Planning Subcommittee; an Economic Summit Subcommittee; a CASQA Partnership Subcommittee; a Green Infrastructure Subcommittee; a Communications to Decision-Makers Subcommittee; and the National Nonpoint Education for Municipal Officials Network (NEMO) U 6 Host Subcommittee.

Education and Outreach

The NPS Encyclopedia and Management Practice Miner

The NPS Encyclopedia is a free on-line reference guide designed to facilitate a basic understanding of NPS pollution control. It provides quick access to essential information from a variety of sources by providing direct hyperlinks to resources available on the Web. The purpose of this on-line resource guide is to support the implementation and development of NPS total maximum daily loads (TMDLs) and watershed action plans, the purpose of which is to protect high-quality waters and restore impaired waters. The NPS Encyclopedia's companion tool, the MP Miner, allows users to cull data from studies of MPs (peer reviewed and others). The MP Miner and the NPS Encyclopedia use the same designations for “land use category” and “management practices” which are similar to those used by the US EPA and the NPS Program Plan. The NPS Encyclopedia can be found at the following URL: http://www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia.shtml.

The NPS Biennial Conference

On May 5-7, 2008, the SWRCB, EPA and CCC hosted the Fourth Biennial NPS Conference in San Diego, California, titled “Integrated Watershed Management: Reducing NPS Pollution”. Sessions this year covered a host of timely and critical issues, including the following:

- After the Fires: Monitoring Ecological Impacts and Watershed Responses
- Comprehensive Watershed Management: Successful Models
- Low-Impact Development: Soup to Nuts
- Adventures in Integrated Regional Watershed Management Plan Development: First-Hand Stories Told From Those in the Planning Process
- Pollutant Loads: The Air-Water Interface
- Realizing the Integrated Regional Watershed Management Plan Dream: Testimonials of those in the Implementation Process
- Monitoring Makes the Difference
- Coastal Nonpoint Source: Impact Assessment and Watershed Management
- What's the Nonpoint Source Solution? Innovative Approaches to TMDL Implementation
- Progressive Examples of Commodity-Based BMP Implementation: Common Issues – Successful Solutions
- Sustainable Infrastructure and Low-Impact Development: Real World Examples of Employing LID to Reduce Stormwater Impacts to Water Quality

In addition, two fieldtrips were offered to conference participants: 1) After the Fires: Water Quality Management in San Diego and the Wild Animal Park; and 2) Extreme Watershed Tour: Adventures among the Grant Projects in the San Diego River Watershed. A workshop on “Understanding and Addressing the Impacts of Hydromodification in Watersheds” was also offered, and one evening was taken up with a well-attended poster session. In addition, this year outreach was expanded to include partners who helped organize the conference and create speaker panels, and sponsors who helped fund the

conference. Approximately 250 people, including speakers and participants, attended this year's conference, and the feedback was positive.

Workshops: Stream Channel Naturalization (within the semi-arid Mediterranean climate of highly urbanized Southern California)

On May 28th, 2008, the State Water Board Training Academy sponsored a half-day tour of the lower Arroyo Seco and Los Angeles (LA) Rivers. The tour was attended by 55 individuals from the Regional Water Boards, CDFG, local municipalities, regional city planners, US Army Corps of Engineers (Army Corps), California Department of Transportation (CalTrans), local flood control agencies, consultants, and research institutions. The tour included views and discussions of the following:

- 1) The Central Arroyo Seco where concrete had been removed and the native stream channel bottom was exposed as part of an Army Corps, Los Angeles Department of Public Works restoration project;
- 2) The low impact development (LID) components of an on-going parking lot renovation adjacent to the Rose Bowl Aquatic Center and the natural channel conditions found as a result of the Central Arroyo Restoration Project;
- 3) A mitigation project where low flows were diverted from the Arroyo Seco River to two adjacent parallel engineered river channels-wetlands. These mitigated wetland-like systems were supplied with a steady source of water (from urban runoff). The water was re-circulated using pumps and river channel slopes were planted with various willows, sycamores, and other native vegetation.
- 4) The Oros End Street Biofiltration Project and associated neighborhood LID technologies. Some LID technologies included the use of native landscaping and reduced impervious surfaces, designed to reduce urban runoff into the adjacent LA River.

On May 29th, 2008, SWRCB Training Academy sponsored a one-day workshop that took place at the Municipal Water District Building in Los Angeles. In attendance were 68 individuals from Regional Water Boards, DFG, local municipalities, regional city planners, Army Corps, CalTrans, local flood control agencies, consultants, and research institutions. Speakers discussed challenges and opportunities facing naturalizing hydrological constricted streams and rivers in urbanized Southern California. Focused topics included: the development and application of the L.A. Regional Curve; protecting and restoring floodplains to manage stream health; determining the appropriate use of hydraulic models and tools; and choosing the appropriate native plant palates and their maintenance for each sites' unique soil and hydrologic conditions. Case studies on restoration sites along Dry Canyon Creek and Los Virgenes Creek provided examples about ways to improve water quality, meet flood control needs and support beneficial uses by implementing well designed stream channel naturalization projects. Over 90% of the attendees felt that the level of material presented to the class was appropriate. The workshop content and instruction were both very well received.

Workshops: Landform Grading and Soil Ecology

On January 17, 2008, a Landform Grading and Soil Ecology workshop was given by H.J. Schor Consulting, Soil Foodweb Inc., and the Sustainable Studies Institute. Over 80 practitioners from a variety of public and private agencies heard presentations on landform grading and soil ecology. Natural soil biological processes instruction included discussion about: how to use microbial inoculations to restore soil health; using soil amendments to prevent soil erosion and encourage re-vegetation; and promoting water conservation by using soil amendments to increase soil water holding capacity. Landform grading was discussed as a preferred

alternative to mass grading for reducing NPS pollution from building sites. Specifically, the focus was on restoring hill slope natural drainage patterns, and landforms for large-scale mining restoration and road construction activities. Landform grading can promote revegetation with minimal irrigation during the establishment phase when the landscaping is planted within natural drainages. The workshop content and instruction were both well-received.

Grants Reporting and Tracking System (GRTS)

The State Water Board requires that all grant recipients of the CWA 319[H] NPS pollution funds report annually on the "load reductions" achieved through the implementation of the grant project, specifically for suspended solids, nitrogen and phosphorous. This data is entered by State Water Board staff into a national database, the Grants Reporting and Tracking System (GRTS). US EPA collects this information in GRTS across the country for CWA 319[H](h)-funded on-the-ground implementation projects where one or more of these three pollutants are addressed by the project. Load reduction data entered into GRTS in a particular year usually reflect the results of a project that was implemented during a previous grant year. The following phosphorous, nitrogen, and suspended solids load reductions in California were reported in FY07 in California:

- 21,840 lbs/year for FY07 - phosphorous;
- 220,991 tons/year of sedimentation-siltation; and
- 20,782 lbs/year nitrogen.



DEMONSTRATING WATER QUALITY IMPROVEMENTS THROUGH MONITORING

Realizing that SWAMP is the California Water Board's principle program that collects water quality information, the NPS Program has partnered with SWAMP to investigate the effect of the NPS land use categories on the ecological health of waters across the state. In addition, this partnership has provided avenues to create opportunities to enhance monitoring activities across the state. In the past few years, the NPS and SWAMP have joined forces to: (1) develop a statewide monitoring program; (2) provide avenues to enhance regional monitoring through the development of Regional Monitoring Programs (RMPs); (3) enhance and build the state's volunteer monitoring program (the Clean Water Team); and (4) establish the California Water Quality Monitoring Council (Monitoring Council).

Surface Water Ambient Monitoring Program (SWAMP) (FY 07- 08)

Functioning as a statewide monitoring effort, SWAMP provides the scientifically sound data we need to effectively manage California's water resources. "Ambient" monitoring refers to the collection of information about the status of the physical, chemical and biological characteristics of the environment.

SWAMP has four primary responsibilities:

- Monitor, assess, and report on California's water quality.
- Create a common framework that coordinates statewide monitoring efforts by offering a uniform and objective approach to monitoring, sampling and analytical methods and by maintaining quality control through consistent data quality assurance protocols, data validation and centralized data management.
- Serve as a technical resource by communicating among project participants and stakeholders and by providing technical expertise.
- Collaborate with other agencies in the state that monitor water quality so that efforts are comprehensive, integrated, non-duplicative and appropriately funded.

SWAMP has been working on both statewide and regional assessments, as well as creating partnerships across the state. Several studies have been implemented for the statewide assessment portion of SWAMP. Those studies include the: Perennial Stream Assessment (PSA), Reference Condition Management Plan (RCMP), lakes, reservoirs, and coastal waters Bioaccumulation Study, long term monitoring in large watersheds, and California Monitoring and Assessment Program (CMAP) for Perennial Streams. From the regional perspective, each region has continued its own regional monitoring and assessment programs. Reports, when produced, will be available on the SWAMP website:

http://www.waterboards.ca.gov/water_issues/programs/swamp/.

In addition, SWAMP has invested resources and time into expanding their collaborative efforts. The NPS Program and SWAMP have worked together to not only initiate statewide studies, such as the PSA and the CMAP, but also to work towards creating better partnerships with other state, federal, and local entities.

One of SWAMP's achievements during the past year is the establishment of the Monitoring Council. This effort was initiated through California State Senate Bill 1070 (SB 1070). SWAMP continues to build it's partnerships at both a statewide and regional level to leverage resources. More information about the Monitoring Council, and both state and regional board water quality monitoring coordination efforts, is provided below. Information on SWAMP and the Regional Board monitoring programs are located on the SWAMP website at http://www.waterboards.ca.gov/water_issues/programs/swamp.

SWAMP Brochure

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/swa_geninfo.pdf

SWAMP Comprehensive Monitoring and Assessment Strategy

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cw102swampcmas.pdf

Statewide Coordination and Collaboration Efforts

California Water Quality Monitoring Council (SB 1070)

The Monitoring Council was established in December 2007 with the signing of a Memorandum of Understanding (MOU) between California Environmental Protection Agency (CalEPA) and the California Resources Agency (CalRA). The Monitoring Council is focused on developing specific recommendations to improve the coordination and cost-effectiveness of water quality and ecosystem monitoring and assessment, enhance the integration of monitoring data across departments and agencies, and increase public accessibility to monitoring data and assessment information. While the Monitoring Council may recommend new monitoring or management initiatives, it will build on existing efforts to the greatest extent possible. The current Monitoring Council members include representatives from Cal/EPA, the CalRA, CA Department of Public Health, the public, the regulated publicly owned treatment works community, the regulated stormwater community, and the scientific community. The Council has held three meetings since its establishment in 2007, and has identified data and assessment information availability as its first priority. The goal is to develop a statewide water quality data web portal, where assessment information and data will not only be informative and accessible to the public, but also to decision makers.

The web portal is designed to be a one-stop-shop to access information pertaining water quality conditions on a statewide, regional, and local basis. The portal is organized around themes that are framed as common questions (i.e., Is our water safe to drink? Is it safe to swim in our waters? Is it safe to eat the fish and shell fish from our waters? Are our aquatic ecosystems healthy? and What stressors and processes affect our water quality?). This web organizational feature will allow data and information delivery to those who need it in ways that directly meet their highest priority needs. Theme-based workgroups will be developed to enhance the portals as well as the monitoring and assessment programs that provide the information for the themes. Performance measures will be established by the Monitoring Council to guide the workgroups towards developing comprehensive and consistent information to support the themes. A cooperative relationship between the Monitoring Council, the theme-based workgroups, and regional and local monitoring programs will be obtained through the exchange of training, support, and tools, in return for enhanced development and access of monitoring data and information that can be used for baseline and broad-scale assessments. In order to keep this effort ongoing, long-term-sustainable funding will be needed. The Monitoring Council will develop a workgroup to explore options for this funding to continue this long needed coordination effort. For more recommendation provided by the Monitoring Council, please click on the link below.

Monitoring Council Link

http://www.waterboards.ca.gov/water_issues/programs/monitoring_council/index.shtml

Clean Water Team and Citizen Monitoring Collaboration

Citizen monitors play an important role in the protection of local resources by providing valuable information about the condition of their local waterways. These monitors collect various types of data including information on the organisms that live in the stream, habitat information, water quality parameter data imperative to the organisms survival (i.e., water temperature, pH, electro conductivity, dissolved oxygen), and observation data (i.e., debris, trash in the stream etc.).

In 2007, SWAMP and the NPS Program supported focused efforts to coordinate citizen monitoring groups into the statewide monitoring framework. The State Water Board has focused

resources on identifying current water quality monitoring groups across the state, working with a core group to assess their needs and how we can work as a team. Within the next two years, several tools will be put in place to assist in the coordination of these monitoring efforts. Such tools include: a web-based data management and reporting tool for citizens to integrate their data into the SWAMP compatible format; monitoring assistance, supplies and laboratory services; and a communication strategy for citizen monitoring. These efforts will help build the bridge of communication and collaboration between state monitoring programs and citizen monitoring groups.

Clean Water Team Weblink

http://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.shtml

Statewide Program or Special Studies

Building a Statewide Bioassessment Program

SWAMP is continuing to develop a bioassessment program that has the ability to directly assess aquatic life use conditions in California waterways. Bioassessment techniques will allow direct ecological health assessments in surface water based on the benthic macroinvertebrates (BMI) and algal communities that reside there. Benthic macroinvertebrates include insects (e.g., dragonflies), crustaceans (e.g., crayfish), and other invertebrates (e.g., worms, snails) that have varying sensitivity to different pollutants (i.e., pesticides and other organic substances, metals, oil, fine sediments, etc). The health of the stream can be determined by comparing the types of BMIs present in a community to those expected to occur under natural conditions. In addition, to collecting BMI and algae data, SWAMP's bioassessment program also includes other water quality indicators such as pH, dissolved oxygen, turbidity, temperature, nutrients and major cations.

The goal of the Bioassessment Program is to develop tools that will support the objective and effective application of narrative biocriteria standards. Biocriteria defines the desired biological condition of a waterbody, and they serve as the standard against which assessment results are compared. Information collected at reference sites (least disturbed sites) are used to determine the numerical or narrative biocriteria. Even though biocriteria is the goal of the program, SWAMP has developed interim tools, like indices of biological integrity (IBIs) and predictive models, to evaluate BMI to determine the health of a stream or Aquatic Life Use assessments.

SWAMP has made progress in the last year in implementing elements to create a stronger assessment tools. These include:

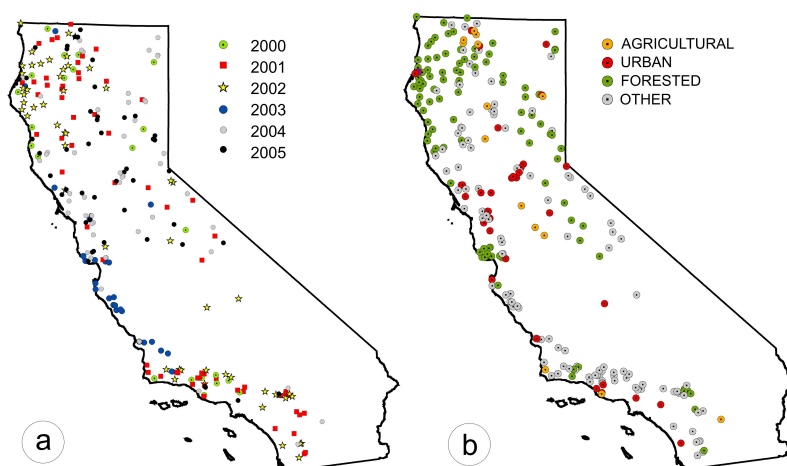
- Reference Condition Management Plan (RCMP) - In October 2007, SWAMP convened a panel of national bioassessment experts to develop a comprehensive statewide strategy for the objective identification and monitoring of bioassessment reference sites, an essential component to biological monitoring. The RCMP will be completed in the summer of 2008.
- Indicator Development - An algae development plan to create an algal IBI has been developed to use as a second bio-indicator, and that plan was completed.

- Data Management – data tools such as table structures for storing PHAB data, field forms, taxonomic data entry/sample log-ins, and reporting modules for MBI metrics/IBI calculations, have been developed.
- Quality Assurance- Several taxonomic standardization documents have been developed and training workshops implemented to provide statewide consistency in data assessment.

California Monitoring and Assessment Program (CMAP) for Perennial Streams

In the Fall 2007, the CA Department of Fish and Game (DFG) completed CMAP's final sampling event. CMAP is a collaborative effort between the NPS Program, SWAMP, U.S. Environmental Protection Agency (USEPA), and DFG. The study uses a probabilistic design, and collects BMI to assess the condition of wadeable perennial streams statewide.

Figure 1. CMAP Statewide Conditions (2000-2005)



Distribution of sites used in condition assessments coded by a) year sampled or b) land use category designation of the site.

An interim report was issued consisting of six years of data from 2000 - 2005 from the CMAP and the Environmental Monitoring and Assessment Program (EMAP). The report includes preliminary information on stressor extent and relative risk, that can provide insight into the magnitude of the effects of various stressors (chemical, habitat and landscape) have on aquatic life use conditions. Other interim reports will include: a report that combines both targeted (regional) data and probabilistic data; an IBI for the Central Valley; and an assessment of agricultural and urban land use effects on BMIs.

Several final assessments will also be produced with eight years of data: CMAP (2004-2007) and USEPA Environmental Monitoring and Assessment Program (EMAP) (2000 – 2003). The final reports address statewide perennial streams conditions. The report also addresses the assessment for four land-use category classes and the relationship between biotic conditions and land use intensification (agriculture, forested, urban and “other”).

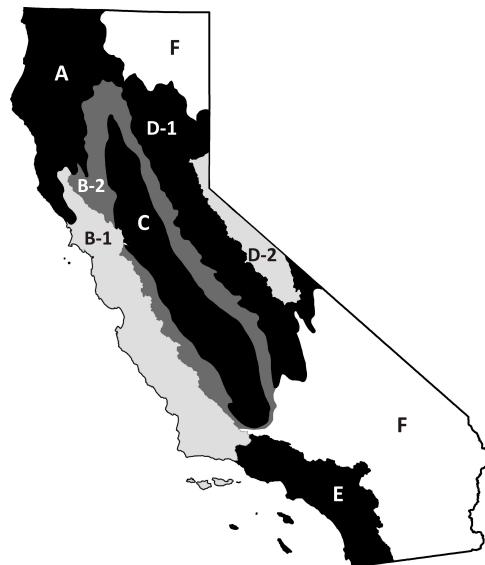
Available Fact Sheets

- Monitoring Results Suggest 67% to 78% of California's Wadeable Perennial Streams in Good Condition Report – October 2006
(http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/wadeable11x8.pdf)
- Ecological Condition Assessments of California's Perennial Wadeable Streams (2000 through 2006) - October 15, 2007
(http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reports/cmap_conditionassessment.pdf)

Perennial Streams Assessment

During FY07-08, SWAMP completed the design of its Perennial Streams Assessment (PSA), a statewide survey of the ecological condition of wadeable perennial streams in California. The PSA is a long term statistical survey designed to build upon two successful prior surveys that have collectively sampled over 400 sites statewide: the EPA's Western Pilot Environmental Monitoring and Assessment Program (EMAP-West, 2000-2003) and the California Monitoring and Assessment Program (CMAP, 2004-2007), which was a collaborative effort of the US EPA and State Water Board's respective Nonpoint Source (NPS) Programs. The new design consists of biological (benthic macroinvertebrates, algae), chemical (WQ chemistry, nutrients, major ions) and habitat (instream and riparian) monitoring at approximately 75 – 90 sites statewide, distributed evenly among six major geographic subregions of CA and apportioned to enable separate assessments for agricultural and urban NPS areas.

Figure 2. Distribution of EcoRegions for Perennial Stream Assessment Study



A= North Coast
B= Chaparral Regions (1=Coastal Chaparral, 2= Interior Chaparral)
C= Central Valley
D= Sierra Nevada (1= Sierra minus Central Lahontan, 2= Central Lahontan)
E= Southern California Stormwater Monitoring Coalition
F= Other (Modoc Plateau, Mojave and Colorado Deserts)

Data collected from these sites will be used to provide condition assessments for all California wadeable perennial streams, estimates of the extent of stream length affected by various major stressors (NPS and other) and the relative risk that these stressors pose to aquatic life use in these streams. Because the PSA builds on similar previous surveys, these data will enable the SWAMP and NPS programs to produce long-term rolling averages of ecological conditions and estimates of stressor impacts. In addition, the sub-region design will allow the development of separate condition estimates for the major regions of the state and the concentration of NPS sites will allow separate assessments for streams that drain agricultural and urban watersheds.

After the design phase of the PSA was completed in October 2007, DFG - Aquatic Bioassessment Laboratory field crews performed reconnaissance on hundreds of sites statewide and will have sampled 84 sites by October 2008. This project is funded through SWAMP and the Southern California Stormwater Monitoring Coalition and will be adding and funding additional 90 sites to this statewide program.

Statewide Evaluation of Bioaccumulation by the Surface Water Ambient Monitoring Program

SWAMP has established the foundation for a new statewide bioaccumulation monitoring program. The effort began with a review of statewide data on bioaccumulation from past monitoring under the Toxic Substances Monitoring Program, State Mussel Watch, Coastal Fish Contamination Program, and other significant monitoring conducted in the 1970s, 1980s, and 1990s. A technical report and fact sheet summarizing this information were released in September 2008. This review documented significant reductions in concentrations in organic contaminants across the state, but found that concentrations of mercury persist above thresholds for concern in many water bodies. The report highlighted a relative lack of bioaccumulation monitoring in California's lakes and reservoirs as a significant data gap. In response to this need, SWAMP initiated a two-year screening survey of bioaccumulation in California's 9,000 lakes and reservoirs in 2007 and 2008. The program plans to perform a two-year survey of the coast in 2009 and 2010, and survey of rivers and streams in 2011. The cycle will then be repeated in 2012. The lakes survey (see Figure 3) includes two major components: (1) a probabilistic sampling of 50 lakes to provide a statewide assessment of conditions and (2) sampling of the state's 200 most popular fishing lakes to determine the need for inclusion on the CWA 303(d) list of impaired waters. Species targeted at each lake include a top predator as a mercury indicator and a high-lipid benthic species as an indicator for organic contaminants. A technical report on year 1 of the lakes survey will be available in January 2009. SWAMP is also producing a technical report this fall summarizing recent findings from mussel watch monitoring in the past 6 years. This report will also review data from other mussel monitoring efforts and make recommendations for continued use of this tool.

Bioaccumulation Data Review Fact Sheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/bop/factsheet.pdf

Reports

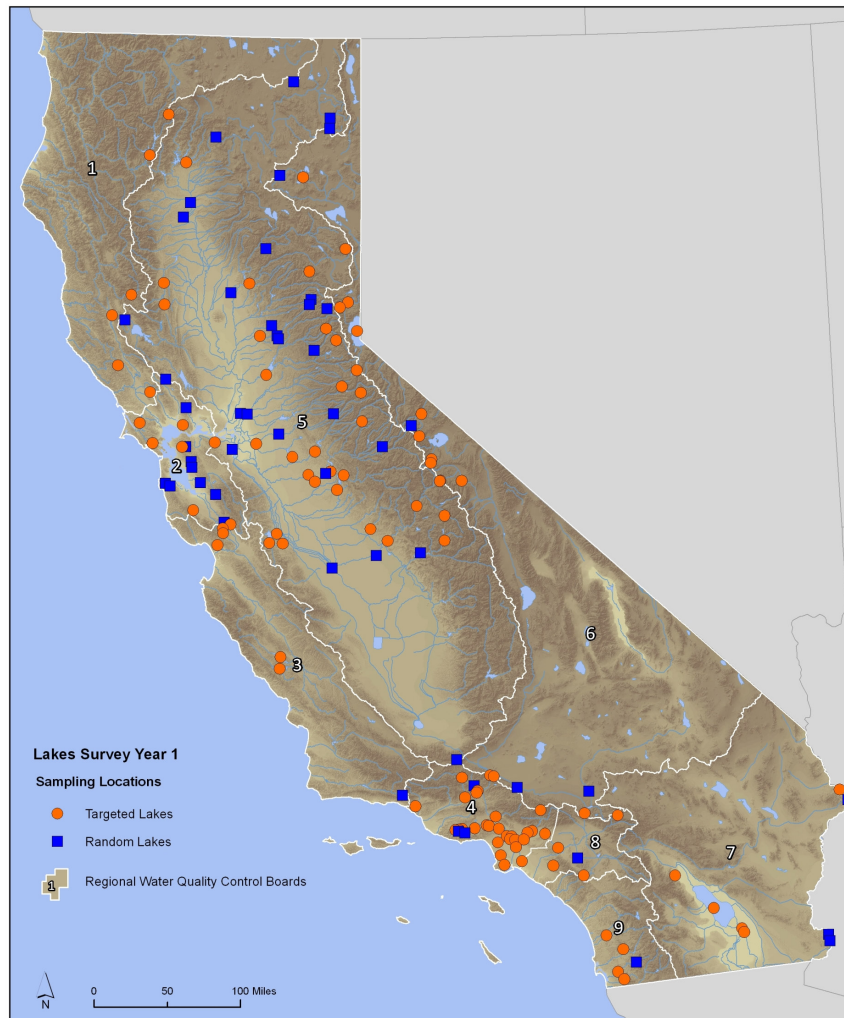
- [Bioaccumulation of Pollutants in California Waters: A Review of Historic Data and Assessment of Impacts on Fishing and Aquatic Life - August 2008](#)
 - http://www.waterboards.ca.gov/water_issues/programs/swamp/bop.shtml
- [Sampling and Analysis Plan for a Screening Study of Bioaccumulation in California Lakes and Reservoirs - 2007 Monitoring Plan - April 2007](#)

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/bioaccumulation_wp2007.pdf

Contaminant Trend Monitoring at Integrator Sites in Streams throughout California

In April 2008, SWAMP, initiated a project designed to support long-term trend monitoring of aquatic life beneficial use attainment in streams throughout the state. The objectives are to:

Figure 3. Location of Sampling Sites for Lakes Bioaccumulation Study



(1) detect changes in concentrations of stream-borne contaminants and their biological effects in large watersheds at time scales appropriate for management decision making, and
 (2) provide a monitoring network that provides opportunities for collaboration and coordination with a wide range of organizations and stakeholders needing water quality information. Toxicity and a suite of pesticides, trace metals, and industrial compounds will be measured annually in sediments deposited near the bases of 100 large, mixed land-use watersheds throughout the state. These indicators are relatively stable over time and provide an integrated measure of the contaminants released from land surfaces throughout the watershed, as well as their potential

for impacts to aquatic life. Results will be used to inform management decision making with regard to beneficial use support in California streams, and to provide feedback on the effectiveness of management activities at regional scales. The project will run for five years with the goal of completing one survey per year. In addition, a “power” analysis will be used to determine the appropriate sampling interval required beyond the fifth year (i.e., every other year or every third year, etc.) to detect trends in water quality. The monitoring plan can be accessed through this link:

Monitoring Plan

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/statewide_stream_contaminants_trend_monitoring_plan.pdf

Regional Water Boards’ Monitoring, Coordination and Collaboration Efforts

North Coast Regional Water Quality Control Board – Region 1

Regional Overview

The North Coast Region receives more precipitation than any other part of the California. Abundant in surface water and groundwater resources, it constitutes only about 12 percent of the annual runoff. Encompassing some 19,390 square miles, including 340 miles of coastline and remote wilderness, urban and agricultural areas, the Region is divided into two natural drainage basins – the Klamath River Basin and the North Coast Basin. Major components of the economy are tourism and recreation; logging and timber milling; aggregated mining; commercial and sport fisheries; sheep, beef and dairy production; vineyards and wineries.

Monitoring and Collaboration Activities

The Regional Boards’ SWAMP team focuses on collecting trend data in the major watersheds in the Region. Ten major watersheds (Smith River, Klamath River, Scott River, Shasta River, Trinity River, Mad River, Eel River, Gualala River, and the Russian River), are sampled 4 times during the year for nutrients, metals, and pesticides.

Other sampling activities include water quality sampling to support TMDLs. These are focused on the development of three TMDLs; Russian River Lakes Mercury TMDL, Russian River Bacteria TMDL and Laguna de Santa Rosa Nutrient TMDL. The sampling in the Mercury TMDL is focused on collecting samples at various locations within three lakes/reservoirs in the Russian River watershed. The sampling events occur monthly, and include sampling streams entering each of the lakes/reservoirs. For the Bacteria TMDL, resources are allocated with the University of California Davis to develop a bacteria/pathogen source identification study in response to elevated bacteria levels identified by multiple monitoring agencies. Current sampling efforts have started in the Laguna de Santa Rosa to identify source of nutrient in to the river. The Regional Board also provides staff and equipment necessary to collect samples in the Bioaccumulation Factors study for Bays and Estuaries.

In coordination with the Nature Conservancy (TNC), the Regional Board provided oversight and staff for the BMI work they are accomplishing on their extensive holdings in the Garcia River watershed. In the coming years, Regional Board staff will be conducting BMI surveys outside of

the TNC holdings to complete a watershed-wide evaluation of conditions that will help to address the Garcia River Sediment TMDL implementation plan.

The Regional Board is currently working with the Klamath Watershed Institute to coordinate a collaborative monitoring efforts in the Klamath River basin, through the development of a basin-wide Monitoring Group to facilitate data collection, data storage and retrieval, data analysis, and the development of funding sources for the continued success of the group. The work involves state, federal and local agencies as well as tribal and local monitoring groups in the Klamath Basin. More information on this effort can be found at:

http://www.humboldt.edu/~kwi/?content=water_quality_workgroup&img=docs2.jpg.

North Coast Region Fact Sheet

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb1_cw101.pdf

Report Fact Sheet

- Surface Water Samples Test Free of Strong Endocrine Disrupting Chemical Activity for Central Valley and North Coast Surface Water Sample
http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/eedc.pdf

San Francisco Regional Water Quality Control Board - Region 2

Regional Overview

The San Francisco Bay Region, centrally located along our state's coastline, marks a natural topographic separation between the northern and southern coastal mountain ranges. More than 7 million people live in a 4,600- square-mile area. The San Francisco Bay (Bay) estuarine system drains 40 percent of California and includes the Central Valley Region's Sacramento and San Joaquin Rivers, which account for 90 percent of the freshwater inflow to the bay. The San Francisco Estuary (Estuary) is the largest estuary on the west coast of North and South America and forms the centerpiece of the nation's fifth largest metropolitan area, comprising San Francisco, Oakland and San Jose. The land surrounding the Bay is densely populated and highly urbanized, with channelized creeks and flood control structures, dams and reservoirs. A heavily industrialized corridor runs along the Contra Costa shoreline from Richmond to Pittsburg, home to major oil refineries and chemical companies. The land draining into the northern reach of the estuary includes San Pablo and Suisun Bays, support pockets of urbanization within open space and extensive crop and range land, including vineyards in Napa and Sonoma counties and dairies in Napa and Sonoma counties. The less developed coastal watersheds in Marin and San Mateo counties support listed population of salmon and steelhead. In the region, contaminants from urban runoff, mining and pesticide application are major concerns.

Monitoring and Collaboration Activities

The Regional Monitoring Program (RMP) is the San Francisco Estuary Institute's (SFEI's) largest program and monitors contamination in the Estuary to provide water quality regulators the information they need to manage the Estuary effectively. The RMP is an innovative collaborative effort between SFEI, the Regional Water Board, and the regulated discharger community. The RMP completed the following activities during FY07-08:

- *RMP Annual Status and Trends monitoring.* The RMP screened water, sediment, and bivalves from the Estuary for organics (e.g., polychlorinated biphenyls [PCBs], polybrominated diphenyl ethers [PBDEs], and polycyclic aromatic hydrocarbons [PAHs]) and inorganics (e.g. mercury). Using RMP funds, the U.S. Geological Survey (USGS) conducted continuous suspended sediment concentrations at six locations in the San Francisco Bay and analyzed water for basic water quality parameters (e.g., phytoplankton in the Bay) on a monthly basis. Results will be summarized in the 2007 Annual Monitoring Report and will be available through the web query tool. The Pulse of the Estuary Report (to be released in early October 2008) will summarize key findings. In addition, these findings will be highlighted at the RMP Annual Meeting, which is held every year in the Fall.
- *Development of a Mercury Strategy.* The RMP focused on mercury studies, which were designed to answer the following question: *Which processes, sources, and pathways contribute disproportionately to food web accumulation of mercury?* A critical step towards reducing mercury impairment of beneficial uses is to identify sources and pathways that contribute disproportionately to impairment (“high leverage sources”). Impairment is caused by the net production and accumulation of methylmercury by biota, so a focus on reducing methylmercury sources, pathways, and processes holds some hope for reducing impairment in a 10- or 20-year time frame versus a century or longer for changing ambient total mercury concentrations.
 - Current studies underway to address this question include:
 - Mercury Isotope Study – Dr. Joel Blum (University of Michigan). This is a two-year study to evaluate whether mercury isotopes can be used for source identification.
 - Diffusive Thin-Film Gradient (DTG) Study – Dr. Holger Hintelman (University of Trent). This is a two-year study to evaluate whether DTG can be used as a proxy for biological uptake of methylmercury.
 - Small Fish Study - Ben Greenfield (SFEI). This is a four-year study using small fish to identify important factors causing uptake of methylmercury into the food web.
 - Development of a methylmercury model/budget – Don Yee (SFEI)
 - As in years past, the RMP hosted the Annual Mercury Meeting to provide new findings to scientists, regulators and managers.
- *Small tributaries.* Expanding upon the characterization of loads from the Guadalupe River and the Delta, a small industrial watershed in Hayward was chosen for additional studies in 2007. Information from this industrial watershed provided valuable information on loads derived from small, low rainfall, but highly impervious, commercial and industrialized “storm drain watersheds” on the Bay margin. The RMP is also funding the development of models to estimate loads to the Bay.
- *Completion of the multi-box model* to predict the fate of polychlorinated biphenyls (PCBs) in the Estuary was completed in 2008.
- *Episodic toxicity monitoring.* Twelve tributaries were sampled to identify toxicity. At the most toxic tributary sediment chemistry analyses and toxicity identification evaluations (TIEs) were conducted to better understand the causes of persistent toxicity in the Bay.
- *Avian exposure and effects.* Using RMP funds, the United States Geological Survey (USGS) has conducted a study to identify thresholds at which mercury impairs egg

hatchability and chick survival. This study determined the concentrations of mercury in egg albumin and the concentrations of mercury in chick down that impacted development and hatchability. Both measures will provide easy to use indicators of population success.

- *Fish effects.* In 2007/2008, a fish effects study was undertaken by California State Long Beach to examine endocrine disrupters in shiner surfperch and pacific staghorn sculpin.
- *Pharmaceuticals.* Samples collected from wastewater treatment facilities indicate the presence of pharmaceuticals in the influent and relatively low to non-detectable concentrations in the effluent. Six of the 39 compounds analyzed were detected above detection limits in the Bay but were generally orders of magnitude lower than available ecological chronic toxicity values.
- *Perfluorinated compounds in Harbor seals.* The RMP is collaborating with the Marine Mammal Center to determine the concentrations of perfluorinated compounds in seals. Because they are mammals at the top of the food chain, they provide an indication of potential risks to humans. Concentrations of perfluorinated compounds in Harbor seals collected from the Bay were an order of magnitude higher than concentrations in seals collected from the reference site, Tomales Bay (i.e., 322 ng/ml vs 29 ng/ml).

San Francisco Bay Region Factsheet –

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb2_cw101.pdf

San Francisco Bay Regional Monitoring Design Website –

- http://www.waterboards.ca.gov/sanfranciscobay/water_quality.shtml

Central Coast Regional Water Quality Control Board - Region 3

Regional Overview

The Central Coast Region includes all of Santa Cruz, San Benito, Monterey, San Luis Obispo and Santa Barbara counties and small portions of several other counties. Prime agricultural lands dominate the bottomlands of many watersheds, and upper watersheds are in rugged national forest lands. The area ranges climatically from the extremely wet Santa Cruz Mountains to the very arid Carrizo Plain. Important marine resources have been afforded protections through two National Marine Sanctuary programs and the Morro Bay National Estuary Programs. The region's population has increased considerably in recent years to approximately 1.4 million. Economic drives for the region consist of tourism, and agriculture. The main water quality issues such as nutrients, pesticides, and sediment are correlated to irrigated agriculture, in addition to offshore oil drilling activities off the coast.

The Central Coast Ambient Monitoring Program (CCAMP) is the Central Coast Regional Water Quality Control Board's regionally scaled water quality monitoring and assessment program. CCAMP is primarily funded by SWAMP and by a private endowment held with the Bay Foundation of Morro Bay. The CCAMP mission is to collect, assess, and disseminate scientifically based water quality information to aid decision makers and the public in maintaining, restoring, and enhancing water quality and associated beneficial uses. This includes integrating data from various Water Board programs like the Cooperative Monitoring Program for Agriculture, the City of Salinas stormwater monitoring program, and others. All CCAMP data is viewable at the CCAMP website (www.ccamp.org). Peer-reviewed

Hydrologic Unit Reports are available on the website, as are other related monitoring and research documents.

Monitoring and Collaboration Activities

CCAMP currently is collaborating on two grants with SWAMP and the State Board to build data uptake tools for managing data from citizen monitoring programs, grants and other programs. These tools will provide a web-based data delivery system that checks data for consistency with SWAMP requirements. This effort will greatly enhance the State's capacity to organize and utilize data from multiple sources, and will aid the NPS Program in understanding the location of water quality problems. These tools are based on the Region's already existing system that has been compiling data from the Cooperative Monitoring Program for Agriculture, into a format that is SWAMP compatible.

CCAMP also collaborated with the Monterey Bay National Marine Sanctuary Program through the Central Coast Data Synthesis, Assessment, and Monitoring project (SAM). This pilot project pulled data from multiple sources into a format that CCAMP developed to be compatible with SWAMP, and assessed the data relative to its ability to answer the NPS Program monitoring water questions (i.e., water quality status and trend, impacts due to NPS pollutants and their sources, effectiveness of management programs and etc.). SAM findings showed that CCAMP was the backbone of data collection activities in the Region, and provided the primary source of data for addressing trends.

CCAMP has recently compiled all CCAMP data (since 1998), and hundreds of thousands of lines of data from other sources (including the SAM project) into a single format (the same as that used for web data delivery) for use in the 2008 CWA 303(d) listing and CWA 305(b) assessment process. Fact Sheets are key evidence in the Listing and Assessment process, and consequently are important tools for focusing NPS management efforts.

The CCAMP monitoring strategy for watershed characterization uses a five-year rotational strategy to conduct tributary based sampling each year in one of the five watershed areas. Permanent watershed sites are monitored monthly for conventional water quality parameters (nutrients, pathogen indicators, minerals, solids, chlorophyll a, basic physical parameters), and once during the year for sediment chemistry, toxicity, and benthic invertebrate assemblages. Currently, CCAMP places 30 monitoring sites in each watershed rotation. During 2007 and 2008 CCAMP monitored in the Santa Barbara watershed rotation area. While CCAMP has monitored in this area, Regional Board staff have reestablished contacts with local monitoring programs through Channel Keepers, the City of Santa Barbara and the County of Santa Barbara, and will use their data in the watershed assessments as appropriate.

CCAMP also samples at thirty-three river and stream mouths, just above salt water influence for long-term trends. This program serves as a "census" of water quality conditions in all of the Region's larger watersheds, and provides a basis for detecting long-term trends and assessing broad scale performance of water quality management efforts. This program answers the question, "are our watersheds getting healthier". This program element will be supplemented through collaboration with a new statewide monitoring program component by SWAMP, which will conduct trend monitoring for sediment toxicity and chemistry at the lower ends of major watersheds. CCAMP has detected significant trends at several of these sites that show evidence of water quality improvements and, in some cases, of degradation.

In 2007-08, CCAMP finalized peer-reviewed assessment reports from its first five-year rotation sampling. These reports, written for each Hydrologic Unit in the Region, address basic status questions of interest to the NPS Program: Is there evidence of impairment to aquatic life? To agricultural uses? To contact and non-contact recreation? To drinking water uses? These reports are available both on the CCAMP and the SWAMP websites. CCAMP has also completed a report on the status of harbor health in the Region.

Central Coast Region Factsheet –

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb3_cw101.pdf

Central Coast Ambient Monitoring Program Website

- <http://www.ccamp.org/>

Los Angeles Regional Water Quality Control Board - Region 4

Regional Overview

The Los Angeles Region encompasses all the coastal watershed of Los Angeles and Ventura counties, along with small portions of Kern and Santa Barbara counties and the drainages of five coastal islands (Anacapa, San Nicolas, Santa Barbara, Santa Catalina and San Clemente). The region also includes all coastal waters within three miles of the continental and island coastlines. The Region has designated 10 watershed management areas. The Los Angeles and San Gabriel River watersheds are heavily urbanized in their lower stretches, but retain largely undeveloped open space areas in their upper portions. The Santa Monica Bay Watershed contains a mixture of urbanized and more rural areas, all of which drain into Santa Monica Bay, a designated water body under the National Estuary Program. The Santa Clara River, Ventura River and Calleguas Creek watersheds contain many small urban centers, but also support large areas of agriculture. The Dominguez Channel Watershed is a heavily urbanized area, which drains into Los Angeles Harbor which, in combination with Long Beach Harbor, forms the largest industrial port on the West Coast. The Los Angeles Region is the most densely populated region in the state, with more than 10 million residents living in the area. Agriculture and open space exist alongside urban, residential, commercial and industrial areas. Open spaces in northern Los Angeles County are steadily giving way to residential communities. The Regional Board regulates over 1,000 point source discharges of wastewater.

Monitoring and Collaboration Activities

In 2007, thirty-two lakes were monitored to assess human health risks associated with consumption of fish by sportfisherman. Samples collected from these lakes were used to augment the SWAMP Statewide Evaluation of Bioaccumulation study.

The Los Angeles Region also collaborated with stakeholders (including City of Los Angeles and City of Burbank) to design a watershed-wide monitoring program for the Los Angeles River Watershed. This monitoring program was patterned after the San Gabriel River Watershed program initiated in 2005. Phase 1 of the program, initiated in 2008, included bioassessment monitoring at 15 random sites and several targeted sites. This Program built upon SWAMP monitoring conducted in 2005. Bioaccumulation and bacteriological sampling will be added to Phase 2 of the program in 2009.

Additionally, four watersheds were monitored to implement the Perennial Stream Assessment design developed by the Southern California Stormwater Monitoring Coalition (SMC). The Perennial Streams Assessment design will be implement in 2009 throughout Southern California. The SMC studies are nested into the SWAMP statewide design initiated in 2008.

Los Angeles Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb4_cw101.pdf

Central Valley Regional Water Quality Control Board - Region 5

Overview

The Central Valley Regional Board stretches from the Oregon border to the northern tip of Los Angeles County and includes all or part of 38 of California's 58 counties. Three major watersheds delineate the region: the Sacramento River (divided into upper and lower river basins), the San Joaquin River and Tulare Lake Basins. The three watersheds comprise 40 percent of the total area of the state, provide over 50 percent of the state's managed water supply, and contain approximately 77 percent of the irrigated agriculture.

The Upper Sacramento River Basin includes all or portions of eight counties. The major rivers include the upper Sacramento, the McCloud and the Upper Feather. Water quality issues typically involve temperature, erosion and sediment discharges, nutrient loading and bacteria concentrations. Water quality and beneficial use protections are closely lined to channel and habitat conditions. Flow depletion is also a significant factor. The area is generally rural. Much of the watershed is public land held by the US Forest Service (USFS) and Bureau of Land Management (BLM). Past and current mining, timber harvest, irrigated/non-irrigated agriculture, livestock grazing and road construction practices play an important role in determining water quality and watershed conditions. The Lower Sacramento River drains into the Central Valley. The basin includes all watershed tributaries to the Sacramento River that are north of the Consumnes River watershed, including the closed basin of Goose Lake the drainage sub-basin of Cache and Putah Creeks and the Yolo and Sutter Bypasses. The main streams are the Sacramento River and its largest tributaries: the Pit, Feather, Yuba, Bear, and the American Rivers to the east, and Cottonwood, Stony, Cache, and Putah creeks to the west. Major reservoirs and lakes include Shasta, Oroville, Folsom, Clear Lake, and Lake Berryessa. The remaining inputs, approximately 25% of the flow, come from streams entering from smaller watersheds along the river and from agricultural and storm drain systems. The Sacramento River basin supplies more than 80% of the fresh water flows in the –Sacramento-San Joaquin Delta. There are over 50 sub-basins or tributaries to the Sacramento River

The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin Valley and River, and encompasses approximately 10.5 million acres including the historic lakebed. Essentially, it is a closed basin since surface water drains north to the San Joaquin River only in years with rainfall well above average. Approximately 3.5 million acres of the upper Tulare Basin are federally owned and consist of part of Kings Canyon and Sequoia National Parks and substantial portions of the Sierra, Sequoia, Inyo and Los Padres national forests. The dominant land use in the basin's valley floor is agriculture, with approximately 4.5 million acres under irrigation. The Basin is divided into six watershed management areas: Kern County, Tulare Lake, Tule Management Area, Kaweah Kings Management Area and Westside Management Area.

The San Joaquin River Basin (SJR) covers roughly 16,000 square miles and has had highly managed hydrology since implementation of the Central Valley Project in 1951. Most of the SJR flow is diverted into the Friant-Kern canal, leaving the river channel upstream of the Mendota Pool dry except during periods of wet weather flow and major snowmelt. Flows resume downstream of the Mendota Pool with eastside discharges dominated by snowmelt from

the Sierra Nevada and Westside discharges dominated by agricultural drainage. Agriculture is the major land use along the valley floor. Urban growth along the Interstate 5 corridor is rapidly converting historically agricultural land to urban use. The SJR watershed has six sub-areas: Northeast, Eastside, Southwest, Grassland, Westside and Southern Delta basin.

Monitoring and Collaboration Activities

In FY07/08, staff from the Central Valley Regional Board focused efforts on expanding collaboration between internal and external surface water ambient monitoring efforts. Internally, a SWAMP approved water sampling procedures manual was drafted; staff from three offices were trained to utilize in-house bacteria analytical equipment; 5-yrs of National Pollutant Discharge Elimination System Data (NPDES) ambient water quality information from major dischargers within and draining to the Sac-San Joaquin Delta was compiled to augment historic water quality information; macros were developed to aid combination of multiple data sets in order to develop fact sheets, lines of evidence and decisions for the CWA 303d/305b integrated report; and a data coordinator provided support to allow water quality information from SWAMP, Grassland Bypass, and the ILRP to be incorporated into SWAMP compatible databases.

Externally, support was provided to fine tune a USEPA funded San Joaquin Basin web-based monitoring directory and to expand the directory to the entire Central Valley. The Central Valley directory is currently being populated with active monitoring meta-data from Region 5's SWAMP, ILRP, Grasslands Bypass, NPDES, and stormwater programs. It is anticipated that the directory will be made available to the public in early 2009, and will eventually identify current monitoring efforts by the CA Department of Water Resources (DWR), USGS, USBR, Grants, Citizen Monitors, University of California and others. The directory could potentially serve as a pilot project for the California Monitoring Council as it attempts to coordinate statewide monitoring efforts.

In addition, weekly, multi-agency coordinated sampling has continued for both the selenium control program and dissolved oxygen TMDL in the San Joaquin River Basin; an interagency agreement was drafted to allow expansion and data sharing of DWR's Northern District trend monitoring efforts; work continued with the Central Coast Regional Board to allow web based data entry of NPDES receiving water information into a SWAMP compatible database; a nutrient holding time study was coordinated with Central Coast and Lahontan Regions, University of California Davis (UCD), DFG, and the statewide PSA staff participated in the development of the Strategic Workplan for Activities in the San Francisco Bay/Sacramento -San Joaquin Delta Estuary; a pyrethroid transport study was initiated to support the Strategic Workplan for the Delta; and a contract with UCD was initiated to develop a bacteria/pathogen source identification study in response to elevated bacteria levels identified by multiple monitoring agencies throughout the Central Valley.

Delta Regional Monitoring Program

The Regional Board initiated the planning of a RMP for the Delta. Past efforts produced monitoring programs that were too ambitious and therefore, unsustainable and unfundable. In addition, previous efforts were driven at the agency staff level. The first phase is to establish a framework for compiling, analyzing, and reporting data collected by existing monitoring programs on a regular basis. A phased approach will then be used to develop the monitoring program.

The initial phase will provide a foundation upon which to develop and implement additional aspects of the monitoring and assessment program. The second, longer-term phase will be to develop and implement a comprehensive RMP that coordinates, and as needed expands, monitoring being conducted in the Delta. Stakeholder involvement and coordination are essential to both phases of this process.

[San Joaquin River Basin Monitoring Partnership Project](#)

The objectives of the San Joaquin River Basin Monitoring Partnership Project are to help the Region produce and share information about surface water quality. Funding was provided by US EPA and the effort is done in conjunction with the SFEI, the Great Valley Center, and the Regional Board. The Project builds on existing programs – notably, SWAMP and the Monitoring Council, established through SB1070. Implementation of the resulting San Joaquin Region Monitoring Strategy will rely on the continued participation and commitments of support and resources from stakeholder and agency partners.

Following public outreach, culminating in a workshop in late 2007, the Project has focused on providing online information. The Project launched a prototype directory of current surface water quality monitoring activities in the San Joaquin region. Through the sponsorship of the Regional Water Board this information is now being incorporated into a Central Valley region-wide directory. The Project is currently preparing a San Joaquin region web portal with links to the directory, technical assistance, and monitoring tools. A final Strategy Report, to be completed in summer 2009, will summarize these accomplishments and present a plan for phased development of a comprehensive monitoring system, supported by a regional data center.

Central Valley Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb5_cw101.pdf

Central Valley SWAMP Efforts Website

- http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_studies/surface_water_ambient_monitoring/index.shtml

Report Factsheet

- Surface Water Samples Rest Free of Strong Endocrine Disrupting Chemical Activity for Central Valley and North Coast Surface Water Sample
 - http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/eedc.pdf

Lahontan Regional Water Quality Control Board - Region 6

Overview

The Lahontan Region is the second largest region in California, spanning 33,000 square miles of eastern California from the Oregon border in the north to the Mojave Desert, San Bernardino mountains and eastern Los Angeles County in the south. The region is nearly 600 miles long and contains the highest and lowest points in the contiguous United States. The region has more than 700 lakes including two designated Outstanding National Resource Waters (ONRWs) – Lake Tahoe and Mono Lake – and numerous other high quality water bodies that are eligible for ONRW status. Due to the enormity of the region's north-south span and its variety of elevation, the region contains diverse habitats, ranging from alpine mountain environments that receive heavy snowpack each year, to low-elevation, dry deserts. A great range of habitats,

precipitation regimes and ecosystem types exist between the two elevation extremes. In addition, topography, glaciation and climatic changes led to the existence of “ecological islands” and the evolution of species, subspecies and genetic strains of plants and animals in the region that are found nowhere else. Particularly notable are fish such as the Eagle Lake trout, Lahontan and Paiute cutthroat trout, Mojave tui chub and several kinds of desert pupfish. The region’s economy is based largely on recreation and tourism. Other major economic sectors include agriculture (livestock grazing, silviculture, dairies), resource extraction (mining, energy production) and defense-related activities (military bases).

Monitoring Activities

During FY07-08, the Lahontan Region completed a comprehensive report on monitoring results for years 2000-05, and it redesigned and updated its monitoring webpage to provide user-friendly workbooks that display available monitoring data for numerous water bodies throughout the region. The region continued its program of quarterly monitoring at 30 long-term monitoring stations, and initiated new projects such as collaborating with ranchers in the Bridgeport Valley on a cooperative bacteria monitoring study. In addition, the region continued its substantial investment in bioassessment and completed first drafts of two multi-metric "Indices of Biological Integrity" (IBIs) for streams in the eastern Sierra Nevada. The IBIs are tools that can, when finalized, be used by all interested stakeholders to measure stream health. In addition to its IBI based on benthic macroinvertebrates, the region is also producing the first-ever algae IBI in California.

Lahontan Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb6_cw101.pdf

Lahontan Regional Monitoring Website

- http://www.waterboards.ca.gov/lahontan/water_issues/available_documents/monitoring.shtml

Lahontan Regional Five Year Report

- http://www.waterboards.ca.gov/lahontan/water_issues/programs/swamp/docs/report2000_05_final.pdf

Colorado River Regional Water Quality Control Board - Region 7

Overview

The Colorado River Basin Region covers approximately 20, 000 square miles in the southeastern corner of California. This basin is the most arid area of the state. The region includes all of Imperial County and portions of San Bernardino, Riverside and San Diego Counties. The region is divided into three watersheds: the Lower Colorado River, Salton Sea Transboundary and Desert Aquifers. The majority of the region’s surface waters are in the Imperial Valley and East Colorado River Basin planning areas. The Salton Sea Transboundary Watershed encompasses the Coachella and Imperial Valley and they are the priority watersheds for the basin. Water from the Colorado River has created an irrigated agricultural ecosystem throughout this watershed. Wildlife and aquatic species are dependent on habitat created and maintained through the discharge of agricultural return flows. Major water bodies in the watershed include the Salton Sea, Alamo River, New River, Imperial Valley Agricultural Drains, and Coachella Valley Storm Water Channel. The beneficial uses for this region include domestic, municipal, agriculture, wildlife habitat and preservation of aquatic life.

The Colorado River Regional Board continues to support projects in the New River, Alamo River, and the Coachella Valley Storm Water Channel. The New River is a severely impaired water body, high in bacterial densities. A new waste water treatment plant recently went online, and some improvements have been made, however more work is necessary. Each year, several illegal immigrants from Mexico cross the border via the river, and are exposed to an assortment of pathogens. The Regional Board is continuing to collect data for the New River in an ongoing monitoring project, and the results continue to show high densities of bacteria.

The Alamo River receives agricultural runoff. The Regional Board has recently adapted a TMDL to deal with silt influence into the river and staff are collecting data from ongoing monitoring activities. Currently, there is not enough data available to determine the success of the implemented TMDL. However, preliminary total suspended solids data suggests that the silt is decreasing in the river.

Coordination Activities

The Regional Board is working with the International Boundary Water Commission (IBWC) from Mexico. In the past, the IBWC assisted in monitoring the section of the New River that runs through Mexico.

Colorado River Basin Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb7_cw101.pdf

Santa Ana Regional Water Quality Control Boards - Region 8

Overview

The Santa Ana Region is one of the smallest and most densely populated of the nine Regional Water Quality Control Boards with 5 million residents. The Region includes most of Orange County and portions of Riverside and San Bernardino Counties. The Mediterranean climate is generally dry in the summer with wet mild winters. The average annual rainfall is approximately 15 inches, occurring largely between November and March. The region has two main rivers; the Santa Ana River and the San Jacinto River. The Santa Ana River originates in the San Bernardino Mountains, and flows through San Bernardino, Riverside and Orange counties on its way to the ocean. It transports more than 125 million gallons per day of recycled water from Riverside and San Bernardino counties for recharge into the Orange County Groundwater Basin and satisfies approximately 40 percent of the Orange County's water demand. The San Jacinto River, a major tributary to the Santa Ana River, is ephemeral, flowing only during large storm events. The terminus of the San Jacinto River is typically Lake Elsinore during most storm events and then Lake Elsinore will spill into the Santa Ana River via Temescal Creek. Except for coastal streams that empty directly into the ocean, the stream network in the Santa Ana Region is made up of first, second, third, and fourth order streams that empty directly into the Santa Ana River or the San Jacinto River. The Santa Ana Region is also home to significant coastal water resources, including several miles of beaches, Newport Bay, Upper Newport Bay Ecological Reserve, Anaheim Bay, Huntington Harbour, Bolsa Chica Ecological Reserve and two State Water Quality Protection Areas. The Region's population density and resulting land use activities affect its water resources. Pollutants affecting water quality include the presence of excessive nutrients, excessive bacterial levels and contamination due to legacy pesticide usage.

Monitoring Activities

On the external front, in FY07/08, staff from the Santa Ana Regional Board focused efforts on analyzing and gathering data for the use of the CWA 305 (b) Report and the update of the CWA 303 (d) List. The Regional Board also participated in meetings with the Southern California Municipal Programs to collaborate on watershed wide monitoring. The Regional Board is also continuing monitoring of the region's streams using bioassessments, and participating in teleconferences with other states to determine the optimum sampling protocol for bacteria in freshwater systems.

On the internal front, staff has been collaborating with staff from various sections to ensure that quality assurance project plans conform to the SWAMP guidelines, and that SWAMP sampling protocols are followed to ensure comparability of the data.

Sana Ana Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb8_cw101.pdf

San Diego Regional Water Quality Control Board - Region 9

Overview

The San Diego Region stretches along 85 miles of scenic coastline from Laguna Beach to the Mexican border and extends 50 miles inland to the crest of the Coastal Mountain Range. It encompasses most of San Diego county and parts of southwestern Riverside County and southwestern Orange County. The San Diego Region's Mediterranean-like coastal climate is generally mild; little precipitation falls within this semi-arid region. Most precipitation falls from November through February and occurs principally as rain, with snow common only in the high mountains. The region's growing population enjoys many water-related recreational activities such as boating, surfing and fishing. The landscape of the region is diverse and varied, encompassing estuaries, bays, lakes, rivers, canyons, mountains and desert habitats. The region supports diverse wetlands, including seasonal vernal pools, coastal salt marsh, freshwater marsh and riparian woodlands. Flow in many of the region's streams ranges from perennial to non perennial along their lengths, with some segments flowing for a few months each year or only during and immediately after rainfall. Nearly all of the acres of lakes within the region are municipal drinking supply reservoirs. The region imports approximately 90 percent of its water supply from Northern California and the Colorado River, and much of this water passes through or is stored in the local reservoirs. These reservoirs are the emergency drinking water for the region; the storage is strategically managed for the eventual loss of imported water sources should a major earthquake or other event interrupt the flow through aqueducts.

Monitoring and Collaboration Activities

The SWAMP program in San Diego is designed to support and expand water quality assessments of the Region's waters (CWA 305[b]); determine whether water quality standards are met to support listings or de-listings of water quality limited segments (CWA 303[d]); and to provide information to help make decisions about problems and locations that should be prioritized in order to initiate or support site-specific actions, such as traditional enforcement. Additional objectives of the SWAMP are to identify long term trends in water quality, beneficial uses and habitat; support development and refinement of the IBI; develop lasting partnerships with stakeholders; and to disseminate information.

Under SWAMP, Regional Board staff are collaborating to capture monitoring information collected through other State and Regional Water Board Programs such as the TMDLs, NPS, and Watershed Project Support programs.

In 2007-08 post-fire bioassessment data and water quality (chemistry and toxicity) monitoring was conducted in the San Juan, Santa Margarita, San Luis Rey, Carsbad, Peñasquitos, San Diego, Sweetwater and Tijuana hydrologic units. Reports on this data are not available at the present time. In addition, funding provided through a Cleanup and Abatement account is supporting a project to investigate sediment contamination and eutrophication in San Diego coastal wetlands.

The Region is involved in three collaboration efforts;

- 1) Researching the relationship between organic enrichment and community composition of benthic macroinvertebrates. Samples were collected in the Tijuana watershed in San Diego County and in the Sierra Nevada Mountains. This effort is being conducted by Jens Elligehausen at the University of Kassel, Germany, Rick Gersberg, San Diego State University and David Herbst of the Sierra Nevada Aquatic Research Lab, University of California Santa Barbara.
- 2) Collaboration with the DPR. The goal of this study is to assess urban pesticide use in urban drainage and receiving water from stormwater runoff and baseflow in major urban area in California. The San Diego River Watershed is one of the areas that is included in the study. Regional Board staff assisted in the site selection for this project.
- 3) BUG IT is a collaboration effort between the San Diego Stream Team, the San Diego Regional Board, and Joe Purohit of EcoLayers Inc. This project brought together the spatial and temporal aspects of bioassessment into a state-of-the-art web-based application called EcoLayers (Software for Collaboration Environmental Governance). All bioassessment data since 1998 are uploaded in Ecolayers. The Ecolayers website is at <http://www.ecolayer.com/>.

San Diego Region Factsheet

- http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/factsheets/rb9_cw101.pdf

San Diego Regional Board Monitoring Website

- http://www.waterboards.ca.gov/sandiego/water_issues/programs/swamp/index.shtml

While the NPS Program continues their partnership with SWAMP to obtain water quality information on surface water and NPS effects on water quality, our program plans to expand the partnership with more programs as well as other agencies. The effort will create cooperative and collaborative partnerships with other entities, and allow the state to leverage their resources in a more efficient and effective manner to solve water quality problems in California. For example, in 2008, the NPS Program partnered with the TMDL Program. We provided resources (money and staff) to help with the implementation of TMDLs. In the following years, our program plans to partner with other water quality programs. In addition to creating new partnerships, we will be developing mechanisms to track the effectiveness of implemented MPs in the state. This effort will require collaboration and coordination with many State and Regional Board Programs, as well as federal, state, local, and volunteer monitoring programs and agencies.



TARGETING FUNDING TOWARDS IMPAIRED WATERBODIES

2007 Clean Water Act 319[h] Projects

The CWA 319[h] Grants Program is an annual federally funded NPS pollution control program that is focused on controlling activities that impair beneficial uses and on limiting pollutant effects caused by those activities. The NPS Program establishes priorities and recommends that funds be allocated across the various land use categories. Because pollution from agricultural lands is recognized as the largest source of NPS pollution within the state, agriculture accounted for 49% of the CWA section 319h funds disbursed between 2000 through 2007 (see Figure 4). During this period hydromodification projects received 28%; urban areas accounted for 9%; forestry accounted for 8%, Wetlands, Riparian Areas and Vegetated Treatments Systems received 5%; and Marinas and Recreational Boating accounted for 3% of the allocated funds.

During the current year the projects listed in Table 2 were selected by the Water Board through the CWA 319[h] Grant Application Process (GAP). These implementation projects were chosen because they met the Water Boards' priorities established in the GAP which included that the project implement the load-reduction requirements of approved or soon to be approved TMDL implementation plans and existing watershed plans. Project proposals that addressed TMDL implementation and those that address problems in impaired waters were favored in the selection process. There is also a focus on implementing management activities that lead to reduction and/or prevention of pollutants that threaten or impair surface and ground waters. In addition, the State is required to match the annual CWA 319[h] section funding with approximately a 40% "match" of State funding. The funding used for the "match" is summarized in Table 3.

Figure 4: 319h Projects by NPS Categories (2000-2007).

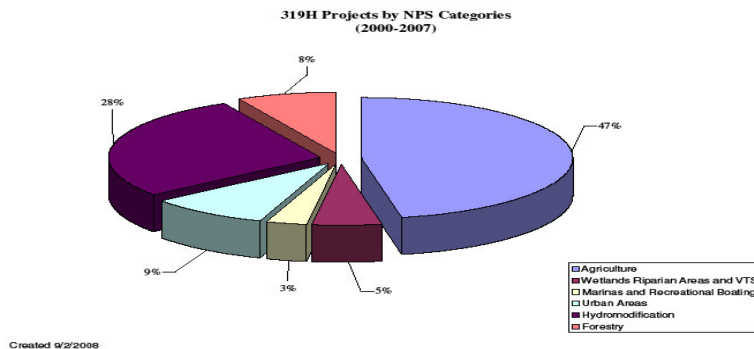


Table 2. 2007 CWA 319(h) Implementation Grants

Project Name	Project Description	Watershed Code	Grant Amount (\$)
Salmon River Road Restoration Phase 3 - North Fork	The inventory and assessment phase would analyze road benefits and impacts to inform the management strategy of roads in the 130,500 acre North Fork sub-basin. The Cooperator (Salmon River Restoration Council) is ranking debris flow risks under an existing grant. A field inventory would assess riparian shade loss potential, and estimate costs to fix the highest priority sites. The Restoration work would storm-proof (outslope, reconstruct fills, and surface) 2 road segments in the North Fork and Lower South Fork. The purpose is to improve road drainage and reduce chronic and catastrophic erosion into the Salmon River system. The roads have had an sediment source and access analyses. NEPA/CEQA documents will be complete by March 2007. All priority sediment source reduction work in the South Fork will be complete in October 2006. Work has progressed watershed-by-watershed since 1998, in partnership with the Department of Fish and Game and the local watershed council.	North Fork Salmon River	315,000
Fish Rock Road Sediment Reduction	Implement Garcia River Sediment TMDL through identified priority sediment reduction projects as identified through the 5-County Salmonid Conservation Program's D.I.R.T. road inventory. Road assessments have been completed for the entire County road system and Fish Rock Road ranks as one of the highest priority roads for treatments.	Garcia River	787,552
Navarro River Watershed Sediment Reduction	The Navarro watershed is listed as an impaired water body on the 303-d list for both sediment and temperature. TMDL Technical Support Documents have been developed. The Navarro Watershed Restoration Plan (1998) recommends controlling road sediment erosion, increasing riparian vegetation, and improving the frequency and depths of pool habitat. This project will address watershed problems identified in the Plan--and the TMDL TSDs, by: 1) implementing road assessments, upgrading 18.0 miles of unimproved roads to control road-related erosion for a total	Navarro River	946,075

Project Name	Project Description	Watershed Code	Grant Amount (\$)
	of 36.5 miles to be completed over 2 years; and 2)enhancing 0.09 miles of riparian by stabilizing banks, and planting native plants to restore function and connectivity to the riparian. A total of 5 locations will be treated in three of the major sub basins of the Navarro River watershed. Landowner access and maintenance agreements have been developed; coordinated permitting is also available for some implementation phases of the project.		
Scott River Road	This Project has two parts: Restoration and Inventory/Assessment. The Restoration part would reconstruct 7.7 miles of road segments on National Forest land within the Scott River watershed. The purpose of improving road drainage and reducing chronic and catastrophic erosion into Canyon, Kelsey and Tompkins Creeks and the main stem Scott. The roads proposed for restoration have already been inventoried and analyzed under NEPA and were deemed to be the highest treatment priority. The inventory/assessment part of the project would occur in the next highest set of priority watersheds for beneficial uses of water affected by National Forest roads. It would address road attributes developed in cooperation with North Coast Board staff and project cooperators. The Scott River TMDL Action Plan calls for an inventory of all roads on national forest land in the watershed.	Scott River	251,250
Rural Road Erosion Control Assistance	Erosion control on rural private (non-County) roads in the San Lorenzo River, Aptos/Valencia Creek and Lower Pajaro River watersheds in Santa Cruz County	San Lorenzo River and Pajaro River	167,724
Total Funding			\$2,467,601

Table 3. 2007 CWA 319(h) “Matching” Grant

Project Name	Project Description	Watershed Code	SRF Loan Amount (\$)
Conservation Fund Big River and Salmon Creek Conservation Forestry Acquisition Project	The Project consists of the acquisition and conservation of 11,600 acres of forestland in the Big River watershed (Big River Tract) and 4,345 acres of forestland in the Salmon Creek watershed (Salmon Creek Tract). By acquiring the land, the CF will help protect and restore water quality, aquatic and terrestrial habitat, and other forest resources. The Big River Tract encompasses almost ten percent of the Big River Watershed, and is adjacent to the recently established 7,300-acre Big River State Park and the 48,652-acre Jackson State Demonstration Forest. The Salmon Creek Tract makes up more than 50 percent of the watershed of Salmon Creek, and encompasses the upper and near stream portions of the watershed. The CF will acquire the two properties with the understanding that they will reduce harvest rates by about 40 percent from those levels allowed under current Forest Practices Rules, prepare new timber harvest plans (THPs), and implement, in cooperation with the North Coast Regional Water Board and other groups in the area, restoration activities and	Salmon Creek and Big River	\$25,000,000

Project Name	Project Description	Watershed Code	SRF Loan Amount (\$)
	appropriate management practices consistent with the NPS Plan to address the TMDL in the Big River watershed and prevent further deterioration of the Salmon Creek watershed. Acquiring the properties will also result in permanently protecting them from subdivision, mining, water diversion, and conversion to non-forest uses such as vineyard development.		
Total Match			25,000,000

In addition to CWA 319[h] funds, California has leveraged other funding opportunities to make large investments in NPS/Coastal NPS, Watershed Management, Integrated Regional Water Management, and Point Source Control (Figure 5). The Water Boards administer numerous grant and loan funding programs from bond measures for the purposes of improving water quality, water recycling, implementing watershed programs, and monitoring groundwater. The State is making a concerted effort to reduce the impacts of NPS pollution, improve water quality and water use efficiency, and maintain clean beaches through passage of recent bond measures that provide funding for these critical areas.

The Water Board uses a multi-faceted approach to ensure the success of the projects it funds. The approach includes a 1) clear understanding of what will be done and when, documented in an agreement, 2) management of the agreement/project during implementation, 3) post implementation water quality monitoring, 4) an effectiveness assessment, and finally 5) roll up of project results to higher level performance measures and indicators. All grant projects must include a plan that shows how the success of the project will be measured. Each project must include specific measures that tie to environmental effectiveness. The Water Board requires a final report upon project completion that summarizes the project and shows whether the purposes of the project were met. The report includes data collected to evaluate its effectiveness. For projects that include water quality monitoring, grantees must provide a monitoring and reporting plan.

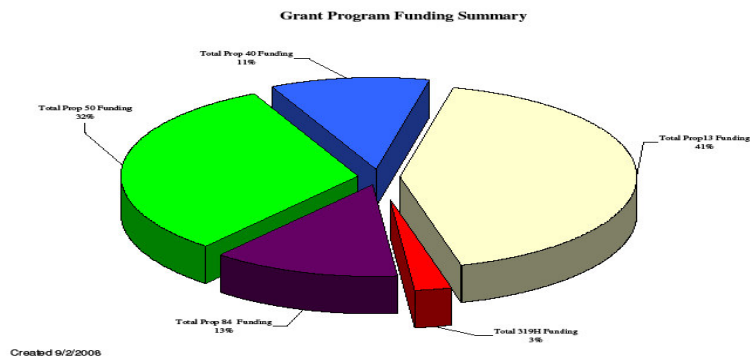
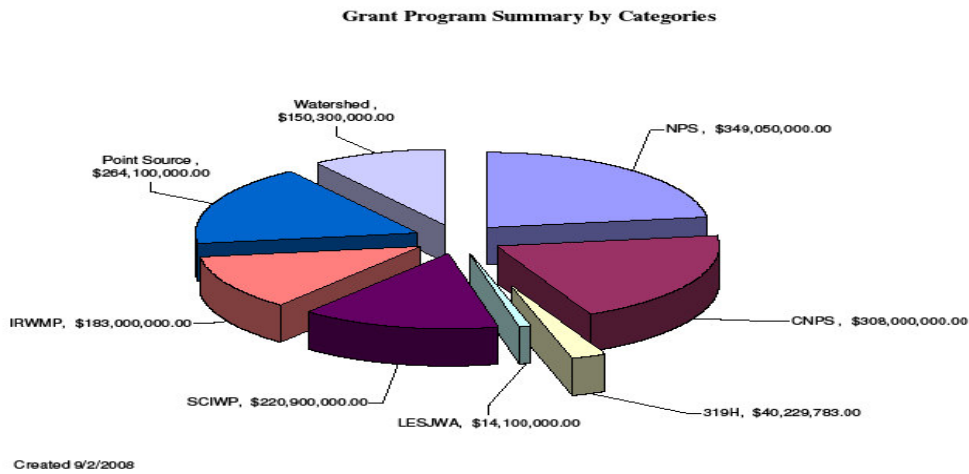


Figure 5: Grant Amounts and Funding Sources.

NEXT STEPS – LOOKING FORWARD

As the NPS program looks forward, we are continually looking for opportunities to improve the program and develop better opportunities for collaboration with our internal as well as external partners. With this in mind, there are numerous opportunities and projects that will help us meet our program goal to prevent or control NPS pollution such that none of the beneficial uses of water are impaired.

California NPS Program – 2008-13 Five Year Implementation Plan

The NPS Program has formed a workgroup of Water Board and CCC representatives to develop the 2008-2013 NPS Five-Year Implementation Plan (NPS Implementation Plan). The purpose of this plan is to reaffirm the commitment by the NPS Program to the goal/objective of implementing all 61 MMs identified in the NPS Program Plan by 2013 with the ultimate goal of protecting and enhancing the beneficial uses of the waters of the State. The NPS Implementation Plan represents the last five year portion of the Fifteen-Year Strategy delineated in the NPS Program Plan and will lay out a specific set of goals, objectives and activities for the NPS Program over the next five years. Each activity will have specific measurable outcomes. The NPS Implementation Plan will call out targeted activities to achieve goals and objectives and will clarify outcomes (results, impacts, or consequences of actions) separate from specific activities. The Plan will provide focus and direction to program implementation, annual workplans and allocation of resources and will lay out performance measures for assessing successful implementation of the Plan.

The California Monitoring Council

In 2006, legislation established the California Monitoring Council which will be administrated by the State Water Board. Some of the priorities the Council will address include: developing an inventory of monitoring programs; improving coordination between agencies, reviewing the effects of existing monitoring programs and making recommendations for change; implementing a public information program; developing a monitoring program and identifying funding resources; and preparing an audit of programs.

Tool Development

SWAMP has started developing tools for bioassessment and physical habitat data to summarize and convert into usable information (e.g., metrics, IBI scores). The applications are planned to be available to State staff (and their contracts) through the SWAMP database and through web-based applications (via nodes) as appropriate. The tools will be used for interpreting biological data, entering physical habitat data into the SWAMP database, interpreting physical habitat data, and managing Quality Assurance/Quality Control data.

The NPS Program will continue efforts in the upgrading education and outreach tools such as the NPS Encyclopedia and the MP Miner. The applicability and use MP Miner will be enhanced through more effective coordination with and input from stakeholders who will be using the tool. Efforts will focus on the needs of the agricultural programs in the Central Coast and Central Valley irrigated lands programs. The NPS Program also will be working more closely with the Regional Water Board's irrigated agriculture programs in developing a strategy for the development of NPS implementation tracking system that can be used to determine the effectiveness of discharger implementation of MM/MP on water quality.

California Monitoring and Assessment Program (CMAP)

As CMAP begins its last year of sampling, efforts will be directed towards developing a coordinated and comprehensive statewide monitoring design, the Aquatic Use Assessment for Perennial Streams (ALU PS). This effort will be aimed at an expanded statewide perennial stream survey focusing on aquatic life and would integrate bioassessment efforts with SWAMP and the NPS Program. ALU PS will have a probabilistic design of 70 to 100 sites where BMI

information will be collected. A key feature of the design would be to identify relationships between land-use stressors and response indicators such as the macrobenthic IBI or periphyton.

ALU PS is will include an integrator and indicator design. The Integrator design will assess trends at the bottom, or close to the bottom of large (HU) watersheds (100 sites). The Indicator design will assess trends, focusing on agriculture and urban land use, in small watersheds (20 sites in 20 watersheds - 10 urban and 10 agriculture). The agricultural sites will be sampled twice a year and urban once. Several indicators (parameters) are being considered including: sediment toxicity, sediment chemistry, and continuous temperature measurement. From the NPS Program perspective, the designs will provide needed information on NPS pollution (statewide scales down to small watershed scales).

Enhanced Use of NPS Regulatory Authorities

As the Water Boards' NPS Programs mature (especially the irrigated agriculture programs), it is anticipated that the use of regulatory and enforcement authorities will expand. To this end, the State Water Board will also begin the process of developing a statewide permit for the regulation of marinas and recreational boating facilities. The first year of this development process will focus on the coastal marinas which have been listed on the CWA 303[d] list for pathogens and metals (e.g.; copper and zinc) with the following year expanding to inland marinas.

SUMMARY AND CONCLUSIONS

During the past year the NPS Program has made considerable progress in moving toward our primary goal of minimizing the impacts of NPS pollution on water quality. In an era of decreased financial resources and increased environmental pressures from land use changes (e.g.; urban development) and climate change, it is a necessity for the NPS Program to use both our personnel and financial resources more efficiently than ever before. Enhanced coordination with our stakeholders and partners in the NPS Program and a continued focusing of our resources (both financial and personnel) in watersheds where definitive implementation plans have been developed should lead to demonstrable improvements in water quality.